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ENGINEERING EVALUATION/ COST ANALYSIS for the TREATMENT OF IMPACTED SOIL AT THE GRANVILLE SOLVENTS SITE GRANVILLE, OHIO

Submitted to

The United States Environmental Protection Agency
Emergency Response Branch
Region V
Chicago, Illinois 60673

Developed for the

Granville Solvents PRP Group
One Columbus
10 West Broad Street
Columbus, Ohio 43215-3435

July 1998
Revision 1

August 1999
Revision 2

M&E Metcalf & Eddy
An Air & Water Technologies Company

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614-890-5501

July 1998
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Section One

1.0 EXECUTIVE SUMMARY

The Administrative Order on Consent (AOC) between the U.S. EPA and a group of potentially responsible parties at the Granville Solvents Site (GSS PRP Group) require the completion of certain Removal Actions at the Granville Solvents Site (Site). These Removal Actions include the installation of a pump and treat system to halt migration of groundwater contamination toward the Village of Granville municipal wellfield, reinstatement of the capacity of the Village of Granville's production well, PW-1, and treatment of soils to required levels so that no groundwater beneath the soils will become contaminated above the groundwater no further action levels. To date the GSS PRP Group has installed and is operating a groundwater pump and treat system and has provided a new production well for the Village of Granville.

This Engineering Evaluation/Cost Analysis (EE/CA) addresses the soil treatment requirements of the AOC. Previous investigations have characterized soils and groundwater conditions. These data have been evaluated, and the extent and distribution of contaminants in soil and groundwater have been defined. The results of the investigations indicate that chlorinated and nonchlorinated volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) listed in Table 1-1 have been detected at the site.

The compounds in the soil are primarily located in the vicinity of the warehouse building. The distribution of contaminants in the soil takes the shape of an inverted cone, with the smallest area of impact at or near the surface and the larger area of impact at or near the water table.

The potential risks associated with the presence of the chemicals of concern in soil were evaluated in a streamlined risk assessment. The residual concentrations of chemicals in soil that are expected to result in no further action levels of the same chemicals in groundwater were evaluated for the direct contact exposure scenario under industrial land use conditions. Based on the risk evaluation, the modeled soil concentrations were refined to generate a set of chemical-specific soil treatment goals. The recommended soil treatment goals are within the range of risks that are acceptable for industrial use at the Site.

A groundwater flow and a contaminant fate and transport numerical computer model were developed to predict the impact of contaminants in the soils on the groundwater beneath the site and to aid in the evaluation of options for the treatment of the impacted soils. A number of site conditions were simulated

TABLE 1-1
VOLATILE AND SEMIVOLATILE ORGANIC COMPOUNDS DETECTED AT THE GRANVILLE SOLVENTS SITE

1,1,1-Trichloroethane	Methylene Chloride
Tetrachloroethene	4-Methyl-2-Pentanone
Trichloroethene	Xylenes(Total)
cis-1,2-Dichloroethene	1,2-Dichloroethene(Total)
1,1-Dichloroethane	Carbon Disulfide
1,1-Dichloroethene	1,1,2-Trichloroethane
Acetone	Chlorobenzene
trans-1,2-Dichloroethene	Benzene
Vinyl Chloride	Bis(2-ethylhexyl)phthalate
Chloroform	Naphthalene
Toluene	2-Methylnaphthalene
Ethylbenzene	Acenaphthylene
2-Butanone	Dibenzofuran
Fluoranthene	Fluorene
Phenanthrene	Di-n-Butyl Phthalate
Benzo(a)anthracene	Anthracene
Benzo(g,h,i)perylene	Carbazole
Benzo(a)pyrene	Benzo(b)fluoranthene
Chrysene	Dibenz(a,h)anthracene
Benzo(k)fluoranthene	Diethyl Phthalate
Indeno(1,2,3-cd)pyrene	Pyrene
Alpha BHC	Styrene
Beta BHC	Trichlorofluoroethane
Bromodichloromethane	1,2,4-Trichlorobenzene
Chloroethane	2-Hexanone
Dibromochloromethane	cis-1,3-Dichloropropene

using the model including: no action, maintenance pumping, and various soil treatment approaches. If all activities currently underway were terminated and no further action taken, the model suggests that groundwater would remain impacted and chemicals would migrate into the wellfield at concentrations above action levels. If, on the other hand, the existing plume containment system continues to operate, chemicals present in the soils would leach into groundwater and be contained and removed by the existing pumping system. Interpretation of the model results indicated that it is likely that the groundwater pumping system would have to operate well into the future (more than 20 years) to meet the requirements of the AOC.

Model simulations were developed to evaluate the effect of the treatment of chlorinated and nonchlorinated VOCs in the soils. The treatment criteria for individual chemicals of concern was developed using the model. The model simulation results in the following conclusions. There are two chlorinated solvents (PCE and TCE) that, if left in place at the current concentrations and the groundwater system terminated, would migrate to groundwater and create a plume of impacted groundwater at or greater than the MCL at the compliance zone. If the soil is treated over a relatively short period of time so that the concentrations of PCE and TCE do not exceed 5530 μg/kg and 6670 μg/kg, the operation of the groundwater system could be terminated following treatment, and no plume of impacted groundwater at or above the MCL would be generated at the compliance zone. Thus, to meet the requirements of the AOC and to minimize the time necessary to operate and maintain the existing pumping system, it is necessary to treat soil to the treatment criteria of 5530 μg/kg for PCE and 6,670 μg/kg for TCE. In doing so, the requirements of the Administrative Order will have been met in an efficient and cost effective manner.

Five alternatives were identified as potential Removal Actions that would reduce the concentrations of PCE and TCE in the soil to below applicable soil standards. The Removal Action Alternatives are: No Action (for comparative purposes); Soil Excavation and Disposal; *In-Situ* Mixing/Hot Gas Vaporization; Pneumatic Fracturing and Soil Vapor Extraction; and Thermally-Enhanced Soil Vapor Extraction. The No Action alternative has been evaluated as required to maintain consistency with the Comprehensive Environmental Resource Conservation and Liability Act (CERCLA) and the Natural Oil and Hazardous Materials Contingency Plan (NCP). Each alternative was evaluated based on the NCP criteria and the Superfund Accelerated Cleanup Model (SACM) guidance. For the chemicals of concern present at the Site, the remedies are not mutually exclusive. Rather, the properties of the chemicals of concern are similar, which allows all of the chemicals of concern to be addressed using one technology. The results of this evaluation indicate that the best alternative is pneumatic fracturing of the soils and soil vapor extraction (SVE). This alternative would involve two primary components:

1. Enhanced pump and treat with the installation of a third extraction well.
2. Installation and operation of an SVE system using pneumatic fracturing to enhance the soil air permeability.

This EE/CA is divided into six sections. Section 1 is the Executive Summary. Section 2 contains the site characterization information, including a streamlined risk evaluation of the recommended soil treatment goals. The Removal Action objectives are described in Section 3, and Section 4 identifies and analyzes the Removal Action alternatives. The recommended Removal Action is described in Section 5. A list of references is provided in Section 6.

2

Section Two

2.0 SITE CHARACTERIZATION

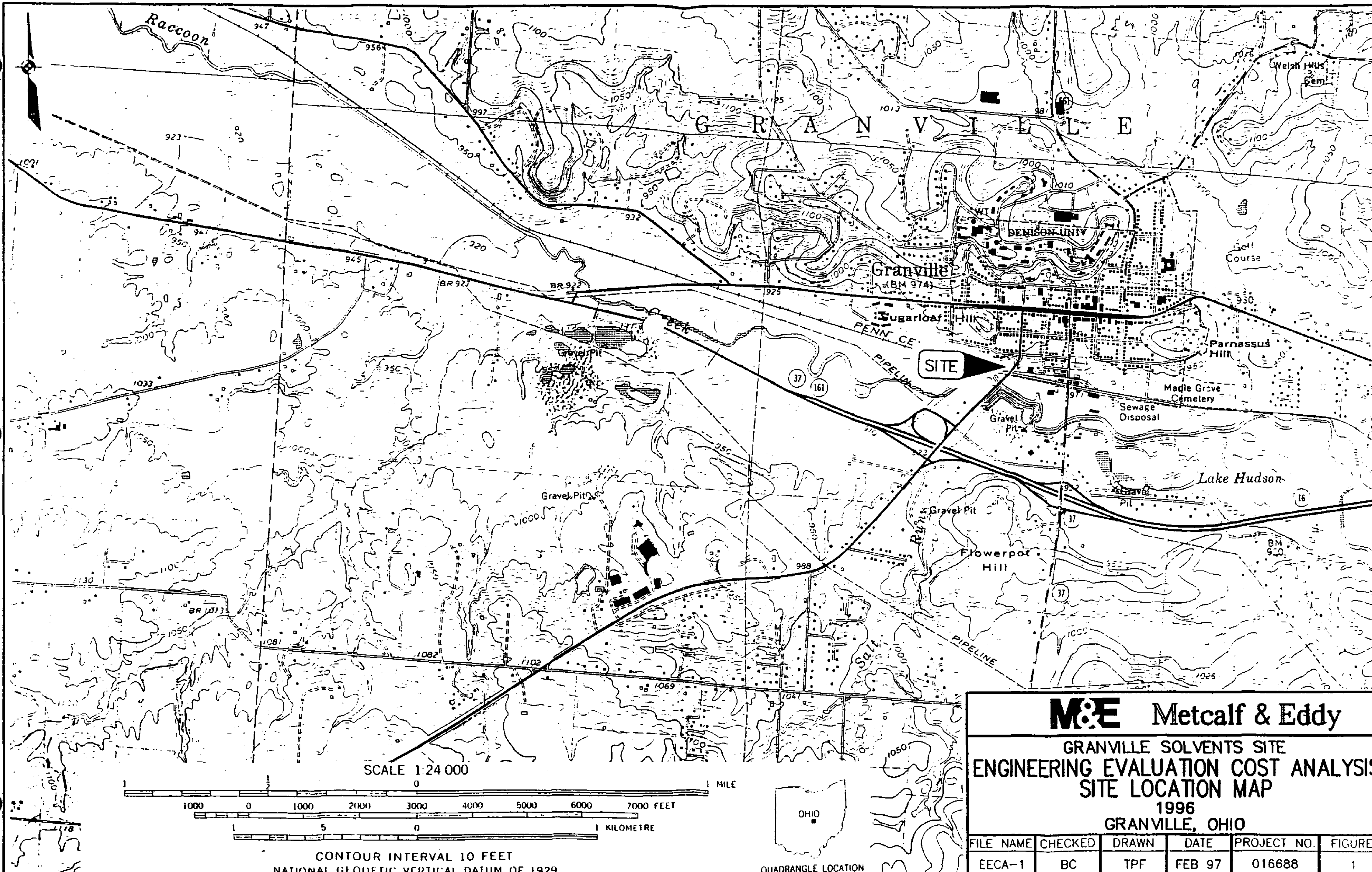
2.1 SITE DESCRIPTION AND BACKGROUND

The Site is the location of an inactive waste solvent blending and recycling operation at 300 Palmer Lane in Granville, Licking County, Ohio (Figure 1). The Site is near the southern corporate limit of the Village of Granville, but within the Village boundaries, located approximately one-third of a mile southeast of downtown Granville. The Site is on a 1.5-acre triangular-shaped parcel located adjacent to a residential area, with some commercial and light-industrial business nearby. The Site is bordered on the northwest by Palmer Lane which slopes downward southwest toward the municipal well field. A former railroad track, now a bike and walking path, is the southern border of the site with the Cherry Street overpass bordering the Site on the east. Raccoon Creek is located approximately 100 feet south of the walking and bike path. The Village of Granville's municipal well PW-1 is located [redacted] as shown in Figure 2. The Site is zoned for commercial use.

2.1.1 Site History

Granville Solvents, Inc., (GSI) reportedly began operations in 1953 as a petroleum bulk storage, distribution, and recycling center in Granville, Ohio (Licking County, Granville Township). The company moved to 300 Palmer Lane in 1958, continuing its petroleum product-related activities. GSI handled aviation fuels, antifreeze and, later, petroleum solvents, purchasing these chemicals in bulk for repackaging and distribution. In 1980 or earlier, GSI ceased handling petroleum-related products and began operating solely as a solvents reclamation and recycling business. Beginning in 1980, GSI began operating under an Interim RCRA Part A Permit assigned by the Ohio EPA. From 1980-86 diverse waste solvents were processed. The handling facilities included fifteen aboveground and underground steel storage tanks. Waste solvents were reportedly brought to the facility in bulk and drum quantities, and were stored. Solid residues were separated for disposal and solvents were distilled and collected for reuse. During this period, the Ohio EPA conducted and documented routine inspections of the operations at the facility.

In 1986, GSI was ordered by the Licking County Court of Common Pleas to cease operation. In 1990 and 1991, the Ohio EPA removed the storage tanks and drums and installed 15 groundwater monitoring wells. Between 1991 and 1994, the Ohio EPA periodically sampled groundwater from several of the



M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE

ENGINEERING EVALUATION COST ANALYSIS

SITE LOCATION MAP

1996

GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-1	BC	TPF	FEB 97	016688	1

[redacted]

Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
SITE FEATURES MAP
1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-3	MR	TPF	FEB 97	016688	2

2.2.3.3 Nature and Extent of Contaminants Detected

Following more than a year of operation of the groundwater extraction and treatment system, the groundwater was sampled and analyzed for VOCs in May 1996. The results are illustrated on Figure 4. The extent of impacted groundwater is illustrated on Figure 5.

2.2.4 Reinstatement of the Capacity of Municipal Well PW-1

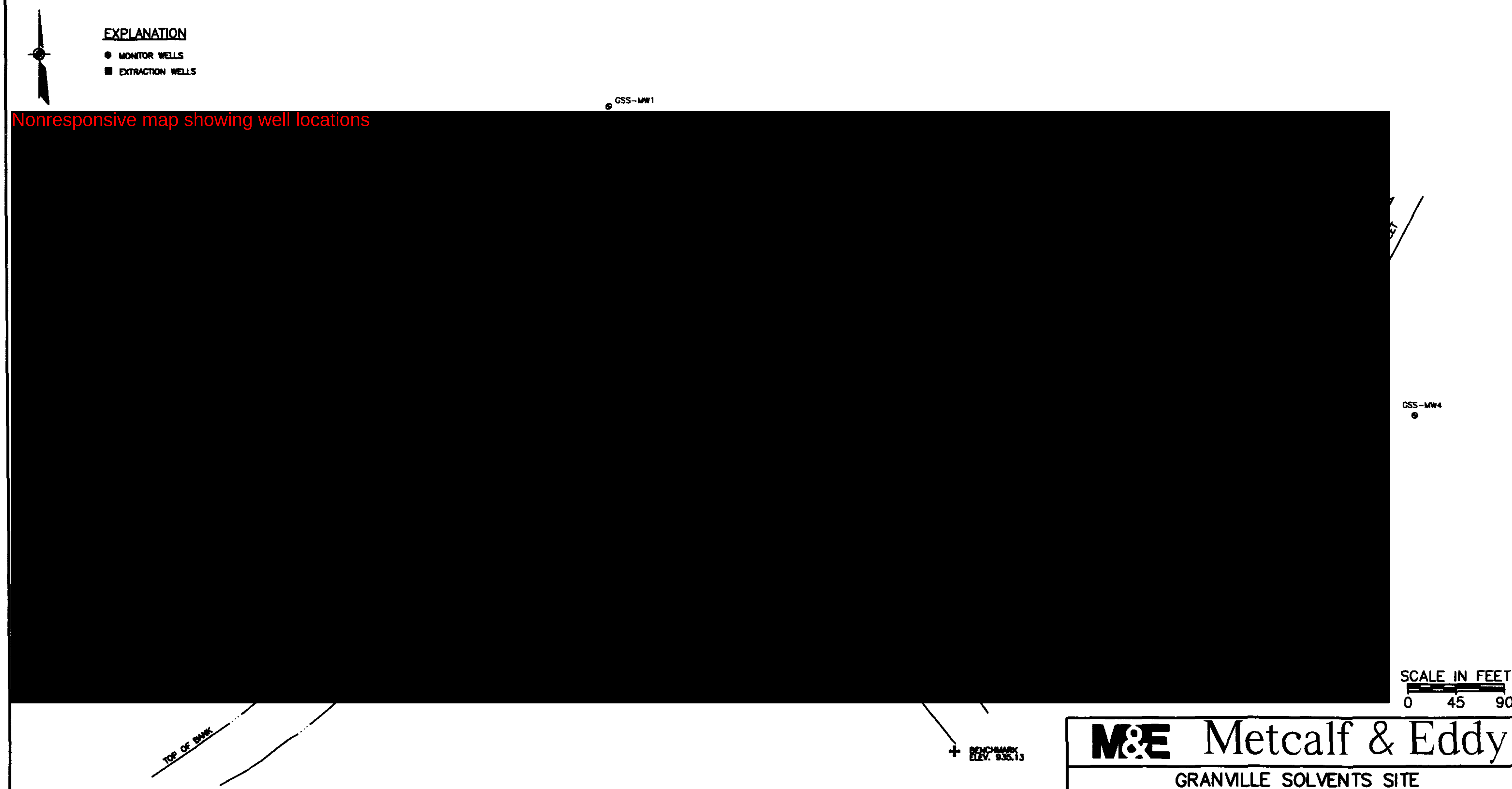
2.2.4.1 Description

To reinstate the capacity of municipal well PW-1 and to preserve the collective capacity of the remaining wells PW-2 and PW-3, the GSS PRP Group evaluated a number of alternatives and subsequently installed a new well, PW-4, [redacted] of the current pumping wells. This new well replaces the previous capacity of PW-1 with no apparent effect on wells PW-2 and PW-3. The location of PW-4 is shown on Figure 6.

2.2.4.2 Alternatives Considered

The GSS PRP Group evaluated three alternatives for reinstating the capacity of inactive well PW-1. These alternatives included the following: (1) taking no further action at the Site and allowing PW-1 to operate as normal (for comparison); (2) treating groundwater pumped from PW-1 that could potentially become contaminated with VOCs; and (3) replacing the capacity of PW-1 with another supply well located upgradient, west of the wellfield. The no further action alternative involved relying on GSS-EW1 from the existing extraction system to act as a hydraulic barrier between the Site and the Village of Granville wellfield. The treatment alternative involved installing systems to treat the groundwater pumped from PW-1. The treatment options considered were UV/Oxidation, and a combination of treatment technologies which included air stripping, carbon adsorption, or retrofitting the existing aerator for VOCs in combination with biological or heat treatment.

Evaluation of these technologies demonstrated that relocation of PW-1 was most effective for satisfying the requirements of the AOC. This evaluation was consistent with the NCP, CERCLA, and SACM.



M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
MONITORING WELL LOCATION MAP
1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-3	MR	TPF	FEB 97	016688	3

monitoring wells. Chlorinated and nonchlorinated VOCs were detected in groundwater collected from on-site and nearby off-site monitoring wells as early as 1991. In late 1993, chlorinated VOCs were detected, for the first time, in the groundwater collected from monitoring well (MW-8) less than [redacted] of the Village of Granville water supply well PW-1.

In early January 1994, the Village of Granville, following a request from the Ohio EPA, removed from service the production well (PW-1) closest to the Site to reduce the likelihood of hydraulic capture of impacted groundwater by the two remaining supply wells.

In early 1994, the U.S. EPA identified a number of Potentially Responsible Parties (PRPs) who had shipped or arranged for the shipment of waste material to the GSI facility for recycling. A group of the PRPs voluntarily formed the GSS PRP Group in February 1994, and commenced negotiation with U.S. EPA on the terms of the AOC. The GSS PRP Group contracted Metcalf & Eddy of Ohio, Inc. (M&E) in March 1994 to begin site work to collect data necessary to design and implement the Removal Action. M&E conducted field investigations, beginning in April 1994, to further define the extent of contaminants in the soil and groundwater at the Site and to determine the Removal Actions, if any, which would be appropriate. Certain members of the GSS PRP Group and the U.S. EPA entered into the AOC in September 1994.

In December 1994, a groundwater pumping and treatment system was installed and operated to halt further migration of contaminants from the Site. This system consists of two extraction wells and a treatment system designed to remove chlorinated and nonchlorinated VOCs from the water. Following the commencement of operations of this system, a long-term pumping test and a treatability study were conducted to evaluate the general effectiveness of the system to meet the required objectives.

To aid in documenting the performance of the system, a Groundwater Monitoring Program Plan (June 1995) was developed and implemented. Additional groundwater monitoring wells were installed in December 1995, and January 1996, and subsequently sampled. The results of this sampling were reported to the U.S. EPA in the *Monitoring Well Installation Report* in September 1996 and appended in December 1996.

In December 1995, a *Design Technical Memorandum for the Remediation of Impacted Soils* (DTM) was approved by the U.S. EPA. This document outlined an investigation intended to gather the necessary data for the selection and design of a solution for the Site soils. To accommodate the collection of additional data, the *Quality Assurance Project Plan* was revised, submitted, and approved (January 1996).

During the spring of 1996, the investigation defined in the DTM was implemented. These data, collected as part of this implementation were evaluated and presented to the U.S. EPA in the *Soil Data Report* (September 1996 and December 1996). Based on these data, a groundwater flow model and contaminant fate and transport model were developed to aid in the determination of what soil treatment was necessary to meet the requirements of the AOC. The results of this effort were presented to the U.S. EPA in December 1996 (*Groundwater Flow and Contaminant Fate and Transport Model)*, and again in April 1998 *Groundwater Flow and Contaminant Fate and Transport Model*, Revision 1).

Based on these efforts, this EE/CA has been developed. It evaluates the alternatives which may be applied to achieve the standards set forth in the AOC.

2.1.2 Requirements of the AOC

An AOC was issued on September 7, 1994, by a group of PRPs and the U.S. EPA pursuant to Section 106 of CERCLA, regarding the GSS. The AOC orders certain Removal Actions that must be conducted (Section 5.2.e-g). These are:

1) *"By December 20, 1994, install and run a groundwater extraction and treatment system which shall halt the migration of groundwater contamination (originating from the Site) toward the Village of Granville municipal wellfield. Treat and discharge all extracted water as required by the Work Plan and this Order."*

2) *"In addition, implement action which is necessary to ensure that any water contaminated with any contamination (originating from the Site) that enters the Village of Granville municipal wellfield drinking water supply meets all risk-based and all applicable federal and state drinking water standards. Such action may include utilization of, modification to, and/or addition to the Village of Granville municipal wellfield drinking water supply system. (For example, such action may be, or include, wellhead treatment which meets the performance standards of this Order; or, may be, or include, the installation of an appropriate alternative water supply.) Such action shall be implemented at the Village of Granville municipal wellfield to the extent necessary both to*

reinstate fully the capacity of PW-1 prior to its reactivation and to the extent necessary to prevent any loss in the Village of Granville municipal wellfield drinking water supply capacity (i.e., the collective capacity of PW-1, PW-2, and PW-3) caused, in whole or in part, because of contamination (originating from the Site), or the threat thereof, entering the Village of Granville municipal wellfield water supply."

3) *"Design, install, and operate a groundwater extraction and treatment system which shall halt the migration of groundwater contamination (originating from the Site) toward the Village of Granville municipal wellfield and shall treat all groundwater within the contamination plume originating from the Site to no further action levels which assure protection of human health and the environment and attain all risk-based standards and federal and state ARARS."*

4) *"Treat the soils at the Site to levels which will assure protection of human health and the environment, to levels which will attain all risk-based standards and federal and state ARARs, and to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels. Respondents shall propose a schedule to develop soil treatment objectives, no further action levels, performance monitoring parameters, and a plan for treatment of the soils, in the draft Work Plan."*

The GSS PRP Group has successfully complied with the first three Removal Actions specified by the AOC. They have installed a pump and treat system consisting of two extraction wells and a water treatment system which commenced operation on December 20, 1994, and continues to operate. This system has successfully halted the movement of groundwater contamination originating from the Site toward the Village of Granville wellfield. Since operation began, the system has continued to treat the contaminated groundwater plume to no further action levels. A groundwater monitoring program has been implemented to document the nature and extent of impacted groundwater and to document the progress of the groundwater action (*Groundwater Monitoring Program Plan*, June 1995; *Monitoring Well Installation Report*, September 1996). Recent results from sampling the groundwater monitoring network verify that the contaminated groundwater plume has been reduced in size and is under control by the pump and treat system.

To reinstate the capacity of Village production well PW-1 and preserve the collective capacity of PW-1, PW-2, and PW-3, a new production well (PW-4) was installed by the GSS PRP Group and has been placed into service by the Village of Granville. This well is capable of replacing the previous capacity of PW-1 and there is no apparent effect on the other municipal production wells.

To address the Site soils, an investigation was conducted to gather sufficient data to evaluate the need to take action (*DTM*, December 1995; and *Soil Data Report*, December 1996). The results of the investigation yielded valuable insight into the nature and extent of impacted soil on the Site. Based on the data reported in the *Soil Data Report* (December 1996), the soil is impacted by the chlorinated and nonchlorinated VOCs and SVOCs listed in Table 2-1:

TABLE 2-1
VOCS AND SVOCS DETECTED IN THE SOILS AT THE GRANVILLE SOLVENTS SITE

1,1,1-Trichloroethane	Methylene Chloride
Tetrachloroethene	4-Methyl-2-Pentanone
Trichloroethene	Xylenes(Total)
cis-1,2-Dichloroethene	1,2-Dichloroethene(total)
1,1-Dichloroethane	*Carbon Disulfide*
1,1-Dichloroethene	1,1,2-Trichloroethane
Acetone	Chlorobenzene
trans-1,2-Dichloroethene	Benzene
Vinyl Chloride	Bis(2-ethylhexyl)phthalate
Chloroform	Naphthalene
Toluene	2-Methylnaphthalene
Ethylbenzene	Acenaphthylene
2-Butanone	Dibenzofuran
Fluoranthene	*Fluorene*
Phenanthrene	Di-n-Butyl Phthalate
Benzo(a)anthracene	Anthracene
Benzo(g,h,i)perylene	Carbazole
Benzo(a)pyrene	Benzo(b)fluoranthene
Chrysene	Dibenz(a,h)anthracene
Benzo(k)fluoranthene	Diethyl Phthalate
Indeno(1,2,3-cd)pyrene	Pyrene
Alpha BHC	Styrene
Beta BHC	

The compounds are primarily located beneath and in the vicinity of the warehouse building. The distribution of these compounds in the soil takes the general shape of an inverted cone with the smallest area of impact at or near the surface and the larger area of impact at or near the water table. Based on the results of the soil investigation and recent groundwater monitoring, an evaluation of the appropriate actions is necessary. This EE/CA constitutes that evaluation. In accordance with CERCLA guidance (*Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA*, August 1993), and consistent with the NCP, this EE/CA contains those data necessary to support the selection of a response alternative. It relies on existing documentation previously developed and provided to the U.S. EPA. The documents relied upon in this EE/CA are cited where appropriate and full references can be found in Section 6 - References.

2.1.3 Current Conditions

This section describes the geologic and hydrogeologic setting of the Site and the soil and groundwater conditions.

2.1.3.1 Geologic Setting

The Site is located on alluvial terrace deposits at the northern edge of Raccoon Creek Valley. The southern portion of the Site is within the 100-year-floodplain of Raccoon Creek. Raccoon Creek Valley was cut by pre-glacial streams and modified by erosion and deposition during glacial periods. The Valley is filled in places with more than 200 feet of unconsolidated sediment deposited primarily by glacial meltwaters from the last glacial event which occurred approximately 12,000 years ago.

The Site is directly underlain by clay-, silt- and sand-rich sediments deposited on the Raccoon Creek floodplain. Below the surficial material is located a highly permeable sand and gravel outwash. Monitoring wells at the site have been drilled into the upper 80 feet of the unconsolidated deposits. A highly permeable sand and gravel outwash is located below the surficial material. The finer-grained surficial materials may retard but do not form a hydraulic barrier to the infiltration of precipitation from the surface. Well logs of the three Village of Granville production wells and four exploratory borings located 700 to 1,600 feet west of the western boundary of the Site indicate a thickness of at least 175 feet of sand and gravel outwash. Village wells PW-1 and PW-2 are screened from 72 to 95 feet below the surface. PW-3 is screened from 83 to 109 feet below the surface, and PW-4 is screened from 65 to 85 feet below the surface. Based on the well logs of the monitoring and production wells, a typical vertical section may be simplified as a low permeability unit of interbedded fine-grained sand, silt, and clay lenses from the ground surface down to the water table (approximately 20 feet below the surface, typically, at

900 feet amsl). Extending beneath the water table, the aquifer consists chiefly of fine- to coarse-grained sand and silt, interbedded with gravel lenses of various thicknesses.

Bedrock in the Valley walls and beneath surrounding uplands consists of sandstone, siltstone and shale with minor conglomerate units. A bedrock ridge extending from the adjacent Sugarloaf Hill underlies the Site, but probably has little influence on groundwater flow in the overlying deposits.

2.1.3.2 Hydrogeologic Setting

The Raccoon Creek Valley contains a highly productive buried-valley aquifer. The Village of Granville produces nearly 750,000 gallons a day, usually from one of three water production wells. The production wells range in depth from 72 to 109 feet. Previously, wells PW-1 and PW-2 generally were pumped several hours each day at 650 to 750 gallons per minute (gpm). Prior to its abandonment and replacement by the Village of Granville, production well PW-3 yielded less water and was generally pumped at 450 gpm. The Village of Granville replaced production well PW-3 at the same location and it currently produces over 700 gpm. A new well, PW-4, has been installed by the GSS PRP Group, and placed in service by the Village of Granville as a replacement for PW-1. Production of 750,000 gallons per day is currently met by pumping wells PW-2, PW-3, and PW-4 in various combinations for portions of each day.

Raccoon Creek flows generally eastward in the vicinity of the Site, and ultimately discharges into the Licking River. Before the Village of Granville wells were installed, it is believed that groundwater movement at the Site was from the northern upland towards the Creek, with a general down-valley component of flow to the east, typical of aquifers in similar buried valleys in central Ohio. Pumping the Village of Granville wells has changed groundwater gradients by capturing groundwater that formerly was discharged to Raccoon Creek, and inducing flow laterally from the Site and possibly from other parts of the aquifer recharge area. Groundwater gradients are low, with only a few tenths of a foot difference in elevation across the Site. Under present conditions, a groundwater divide is present between the Site and the Village of Granville wells. The generally flat gradient indicates slow movement of the groundwater in the area.

There are currently no definitive data regarding the interaction between Raccoon Creek and the groundwater, although Raccoon Creek currently appears to be largely isolated from the aquifer (*Removal*

Action Aquifer Pumping Test Report, 1995). The potentiometric data presented in the *Monitoring Well Installation Report* (December 1996) and surface water elevations measured suggest that groundwater just north of Raccoon Creek and adjacent to the Site is migrating south or north depending on the pumping rates of the production wells in the Village of Granville municipal well field. If the surface water elevation is considered, there is the potential for water to flow either into or out of Raccoon Creek. Through the area of the Site, the stream would appear to be a losing stream based solely on the relative water levels.

There is evidence of heterogeneity in the aquifer which may locally complicate the flow system. The vertical lithologic section in which the Village of Granville wells are screened consists of 40 to 50 feet of coarse-grained sand and gravel. It is overlain by less permeable sediments, up to 60 feet thick, consisting mostly of sand and silt interbedded with minor beds of silt and some clay. The groundwater elevation in shallow monitoring well MW-3 located on the Site is approximately 10 feet higher than in the other monitoring wells, which may indicate a localized perched zone of groundwater. The potentiometric maps indicate that the groundwater gradients are low and consequently the flow velocity beneath the Site is slow.

The outwash-filled valley in the vicinity of the Village of Granville's production wells, and for several thousand feet east and west of the Site, is approximately 3,000 feet wide. Direct percolation of rainfall, which may amount to as much as 8 to 10 inches annually including runoff from the adjacent hills, plus down-valley underflow and a small increment from the bedrock on the sides of the buried valley, could account for all or most of the water removed annually from the aquifer due to pumping of the Village of Granville's production wells.

A reasonable estimate of the transmissivity of the Raccoon Creek Valley aquifer is 200,000 gallons per day per foot (gpd/ft) based on aquifer pumping tests conducted at the Site (*Aquifer Pumping Test Report*, 1995). The saturated aquifer thickness is not precisely known below the Site or the Village of Granville well field, but is at least 100 feet beneath the Site and may be as thick as 200 feet in the area of the well field. The saturated thickness of the unconsolidated sediment decreases rapidly as the sediment on-laps the bedrock on the north and south valley walls. For a saturated thickness of 100 feet, the hydraulic conductivity is estimated to be 2,000 gpd/ft^2.

The soils in the unsaturated zone at the Site and in the vicinity of the Village of Granville wells consists of fine-grained sand, silt, and clay up to about 30 feet thick. These deposits form part of a terrace above the present floodplain. The unsaturated material retards, but does not prevent the movement of, water and chemicals downward to the saturated zone. Those compounds with a tendency to bind to clay particles and organic carbon are inhibited from downward movement. However, percolation of precipitation downward results in the slow transport of these compounds into the saturated zone.

2.1.3.3 Nature and Extent of Contamination - Summary

Chlorinated and nonchlorinated VOCs and SVOCs detected in the soil and groundwater at the Site include the compounds listed in Table 1-1. Those substances have been detected in both soil beneath the Site and groundwater beneath and west of the Site. Details of the nature and extent of these chemicals are provided in Section 2.3 below.

Chlorinated and nonchlorinated VOCs and SVOCs were detected in soil in and around the immediate vicinity of the warehouse building (Figure 2). The distribution of these compounds in the soil takes the shape of an inverted cone, with the smallest area of impact at or near the surface and the larger area of impact at or near the water table.

Chlorinated and nonchlorinated VOCs have been detected in the groundwater at low concentrations, approximately 300 feet west of the western property boundary, with higher concentrations found beneath the GSI property. With the existing pumping system in operation, these chlorinated and nonchlorinated VOCs are contained.

2.2 PREVIOUS REMOVAL ACTIONS

2.2.1 Ohio EPA Emergency Removal Action

Below is a list and a brief description of previous Removal Actions that have been conducted by the Ohio EPA at the GSS. Information was, in part, derived from the following previous work:

Final Report Granville Solvents, Inc.; by Clean Harbors of Kingston, Inc. for Ohio EPA, 1990(?). *Granville Solvents Interim Action*; by Compliance Solutions, Inc. for U.S. EPA, August 26, 1992.

Granville Solvents Interim Action; by Compliance Solutions, Inc. for U.S. EPA, January 13, 1993.
Screening Site Inspection Site Evaluation - Granville Solvents, Inc.; by PRC Environmental Management, Inc. for U.S. EPA, November 29, 1993.

The Ohio EPA conducted a state-led Interim Action, which included characterization and removal of all known containerized waste, excavation, cleaning and removal of storage tanks, and the installation of monitoring wells and sampling of on-site soils to document the existence of groundwater and soil contamination. In June 1990, Clean Harbors, under contract to the Ohio EPA, began the investigation of the GSI site (Clean Harbors 1991). Clean Harbors installed four monitoring wells: MW-1, MW-2, MW-3, and MW-4.

Compliance Solutions decontaminated the warehouse, employee lounge, and steel shed housing the air compressor, disposed of all wastewater, backfilled the tank excavation pits, and completed Site restoration. Compliance Solutions also installed 11 additional monitoring wells around the warehouse and downgradient of the site to determine the extent of migration of contaminants that had been previously detected (Compliance Solutions 1992b). These additional wells were installed to further characterize hydrogeology at the Site and to monitor the potential migration of groundwater contamination.

Chlorinated VOCs that have been detected most frequently in the groundwater and at the highest concentrations at this time are tetrachloroethene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and cis-1,2-dichloroethene (cis-1,2-DCE) (Compliance Solutions, 1992b, 1993).

Laboratory results from VOC analyses of the groundwater samples collected during the seven sampling events conducted by the Ohio EPA during 1990-1993 indicate that the following compounds were detected: acetone, bromodichloromethane, chloroform, cis-1,2-dichloroethene, dibromochloromethane, tetrachloroethene, toluene, xylene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride, 1,1-dichloroethane, 1,1,1-trichloroethane, and 1,2,4-trichlorobenzene (U.S. EPA, 1993).

Groundwater samples collected on January 30, 1991, were also analyzed for SVOCs, pesticides, and polychlorinated biphenyls (PCBs). No positively identified SVOCs, pesticides, or PCBs were detected in any of these samples.

Surface and subsurface soil samples were collected during OEPA's investigation. Soil samples were collected during installation of monitoring wells MW-2D, MW-4D2, MW-6D, MW-8, MW-8D, and MW-P1. The soils samples were analyzed for VOCs and, generally, the samples that were collected from between 20 and 40 feet below ground surface (bgs) contained the highest concentrations of VOCs. Subsurface samples collected at MW-2D and MW-4D2 contained the highest concentrations of contaminants of the five locations (Compliance Solutions 1993). With the exception of MW-P1, surface soil samples contained relatively low concentrations of VOCs. Chemicals detected in the soil at this time included: benzene, ethylbenzene, cis-1,2-dichloroethene, methylene chloride, tetrachloroethene, toluene, xylene, styrene, trichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, and 1,1,1-trichloroethane.

2.2.2 Groundwater Barrier, Extraction and Treatment System

2.2.2.1 Purpose

The AOC requires that the PRP Group:

1) *"By December 20, 1994, install and run a groundwater extraction and treatment system which shall halt the migration of groundwater contamination (originating from the Site) toward the Village of Granville municipal wellfield. Treat and discharge all extracted water as required by the Work Plan and this Order."*

2) *"In addition, implement action which is necessary to ensure that any water contaminated with any contamination (originating from the Site) that enters the Village of Granville municipal wellfield drinking water supply meets all risk-based and all applicable federal and state drinking water standards. Such action may include utilization of, modification to, and/or addition to the Village of Granville municipal wellfield drinking water supply system. (For example, such action may be, or include, wellhead treatment which meets the performance standards of this Order; or, may be, or include, the installation of an appropriate alternative water supply.) Such action shall be implemented at the Village of Granville municipal wellfield to the extent necessary both to reinstate fully the capacity of PW-1 prior to its reactivation and to the extent necessary to prevent any loss in the Village of Granville municipal wellfield drinking water supply capacity (i.e., the collective capacity of PW-1, PW-2, and PW-3) caused, in whole or in part, because of*

contamination (originating from the Site), or the threat thereof, entering the Village of Granville municipal wellfield water supply."

3) *"Design, install, and operate a groundwater extraction and treatment system which shall halt the migration of groundwater contamination (originating from the Site) toward the Village of Granville municipal wellfield and shall treat all groundwater within the contamination plume originating from the Site to no further action levels which assure protection of human health and the environment and attain all risk-based standards and federal and state ARARS."*

2.2.2.2 Description

To meet these requirements, the GSS PRP Group designed and installed a two-well groundwater extraction system to halt migration of the plume, protect the Village of Granville wellfield, and attempt to remediate the plume to levels protective of human health and the environment. A groundwater treatment system was designed and installed to treat the extracted water so that the chemicals of concern were below action levels. Treated water is ultimately discharged to Raccoon Creek, pursuant to authorization from the Ohio EPA and the U.S. EPA.

2.2.2.3 Alternatives Considered

Prior to implementing the Removal Action, a number of alternatives were considered. Among the actions considered were soil vapor extraction coupled with *in-situ* air sparging, groundwater pump and treat, wellhead treatment, and combinations of these and other alternatives for the impacted groundwater. Groundwater extraction was selected to halt further migration of impacted groundwater. Groundwater treatment by volatilization was selected to treat the groundwater to applicable standards for discharge. Additionally, this action is intended to attempt to treat the groundwater within the plume to no further-action levels which will assure protection of human health and the environment and attain risk-based standards.

Criteria considered for evaluating these alternatives were consistent with the NCP, CERCLA, and SACM. They include: implementability (both technical feasibility and administrative feasibility); federal and state acceptability; community acceptability; and cost.

2.2.2.4 Effectiveness of the Removal Action

Since its start-up in December of 1994, the groundwater pump and treat system has removed approximately 437 million gallons of groundwater and 370 pounds of chlorinated and non-chlorinated VOCs from the aquifer beneath the Site. During this period (December 1994 to present), the hydraulic divide between the Site and the well field has been continuously maintained with the complete containment of the leading edge of the plume. Concentrations of chlorinated and nonchlorinated VOCs have decreased throughout the plume, resulting in a reduction of the areal extent of contamination.

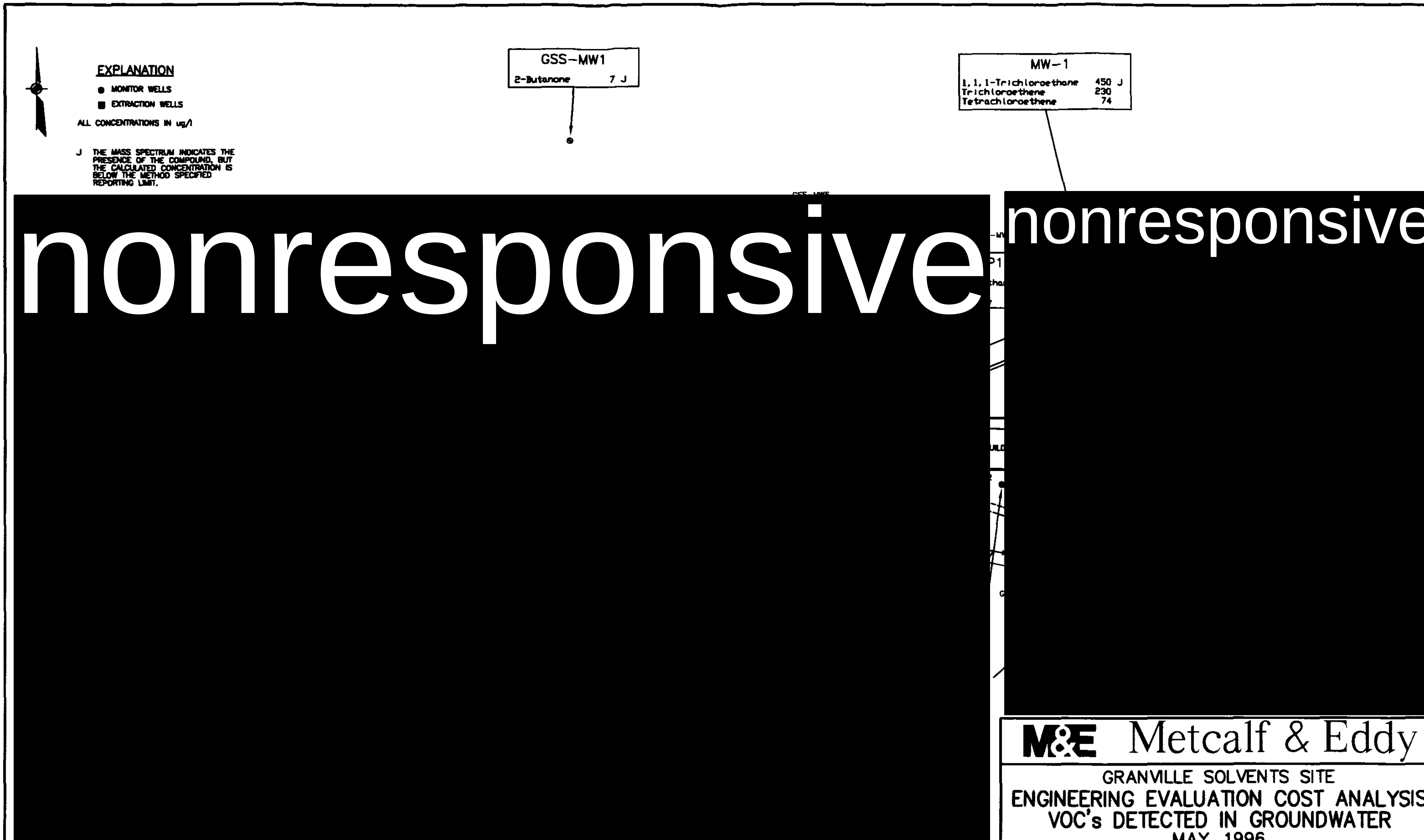
2.2.3 Groundwater Monitoring

2.2.3.1 Purpose

A performance monitoring network for the groundwater extraction and treatment system was installed and sampled: (1) to refine the evaluation of the impacted plume of groundwater, and (2) to verify the performance of the groundwater extraction and treatment system. A regular sampling program has been implemented using a number of the Ohio EPA-installed wells and wells installed by the GSS PRP Group to detect changes in the plume configuration and concentrations. The groundwater monitoring has been used to enhance the system operating parameters and to aid in optimizing the performance of the system.

2.2.3.2 The Groundwater Monitoring Network

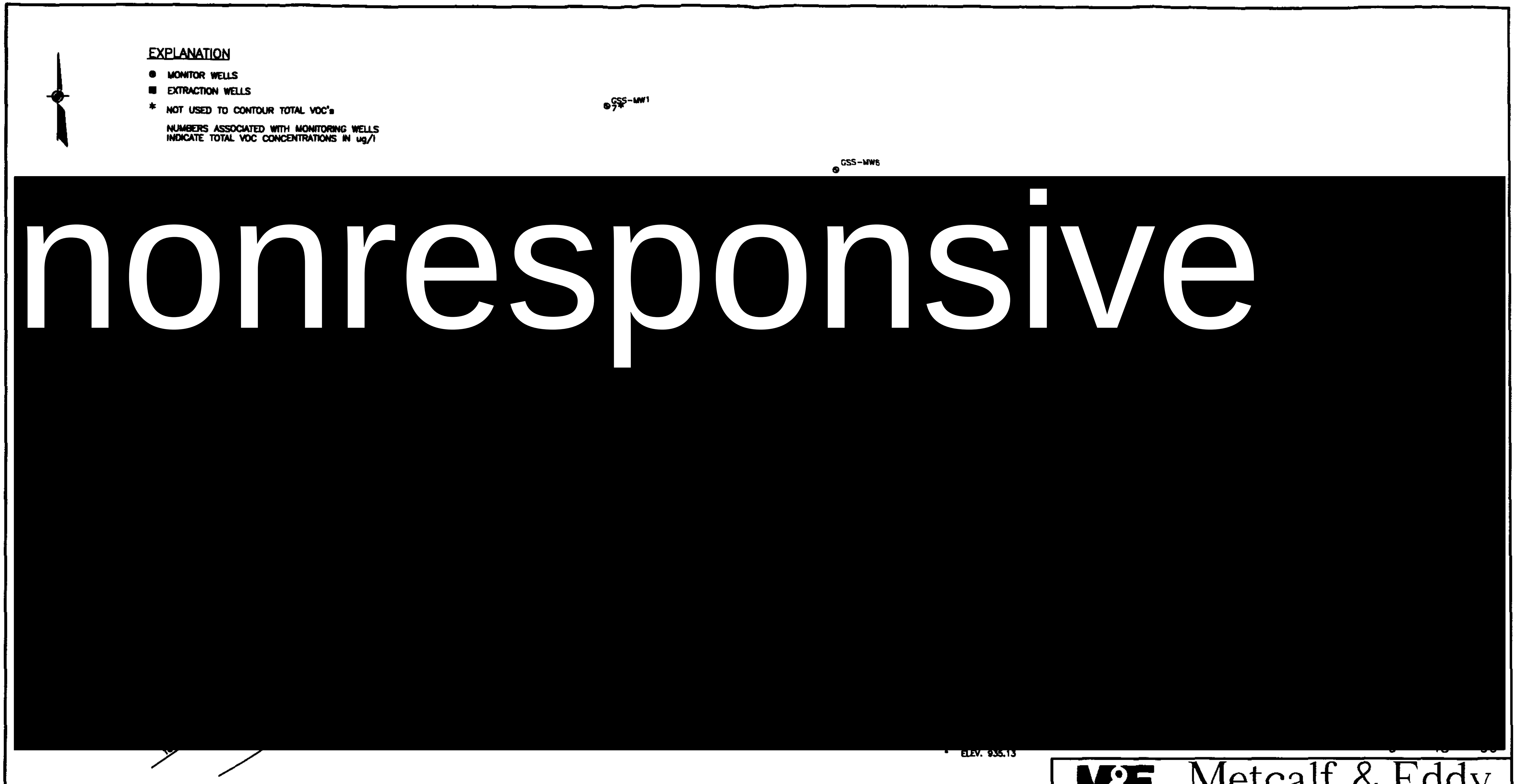
The existing monitoring well network is comprised of 15 monitoring wells installed by the Ohio EPA and 13 monitoring wells and two piezometers installed by the GSS PRP Group. The 13 monitoring wells and two piezometers installed by the GSS PRP Group were intended to further define the extent of the plume to the north, south, and east of the Site. Three of these wells were installed deep in the aquifer to provide additional information on the vertical distribution of contaminant concentrations and to define vertical hydraulic gradients. The locations of these wells are shown on Figure 3.



M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
VOC's DETECTED IN GROUNDWATER
MAY, 1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-3	MR	TPF	FEB 97	016688	4



[redacted]

M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
ISOCONCENTRATION CONTOUR MAP OF
TOTAL VOC's IN GROUNDWATER
MAY, 1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-5	MR	TPF	FEB 97	016688	5

Nonresponsive map showing municipal well locations

[redacted]

EXPLANATION
- MONITOR WELLS
- AIR MONITORING STATIONS
- EXTRACTION WELLS
- VILLAGE PRODUCTION WELLS
- OBSERVATION WELL
- PIEZOMETER

SCALE IN FEET
0 100 200

M&E Metcalf & Eddy

ENGINEERING EVALUATION COST ANALYSIS
LOCATION OF PW-4

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-14	BC	TPF	FEB 97	016688	6

2.3 SOURCE, NATURE, AND EXTENT OF CONTAMINATION

2.3.1 Nature and Extent of Groundwater Contamination

Groundwater data have been collected under three separate efforts. The Ohio EPA collected samples between 1990 and 1993. In the spring of 1994, the GSS PRP Group collected samples from both monitoring wells and borings using a Hydropunch®. More recently, new monitoring wells were installed and groundwater sampled in 1996. The results of each effort are described separately below.

2.3.1.1 Groundwater Data from 1990 to 1993

Groundwater monitoring wells were installed by the Ohio EPA between 1990 and 1993. Groundwater samples were obtained by or on behalf of the Ohio EPA several times during that period (Compliance Solutions, 1992 and 1993; U.S. EPA, 1993). Table 2-2 summarizes the analytical results.

2.3.1.2 Groundwater Data from April and May 1994

The GSS PRP Group conducted groundwater studies from April 29, 1994, through May 20, 1994, to determine the extent of impacted groundwater. Hydropunch® samplers were used to sample the groundwater at 20, 40, 60, and 80 feet below the water table at 15 locations on the Site and within the Village of Granville municipal wellfield.

Acetone was tentatively detected in May 1994 and confirmed in that same month in the Hydropunch® samples and groundwater monitoring well samples extending west in the vicinity of PW-1. The U.S. EPA, Ohio EPA, and the Village of Granville were immediately notified of the detection of acetone.

The results of this investigation were reported in detail in the *Groundwater Monitoring Program Plan* (M&E, 1995). Table 2-3 presents the compounds detected during this time frame.

2.3.1.3 Current Groundwater Data: 1996

As part of the *Groundwater Monitoring Program Plan*, 1995, approved by the U.S. EPA, the GSS PRP Group was required to install additional monitoring wells and piezometers to further define the extent of

TABLE 2-2
GROUNDWATER SAMPLING RESULTS SUMMARY 1990-1993*

Sample Number Date Collected Units	Maximum Concentration Detected μg/l	Well Location with Maximum Concentration Detected
1,1,1-trichloroethane	2600	MW-6D
1,1,2-trichloroethane	0.5	MW-4, MW-4D
1,1-dichloroethene	109	MW-1
1,1-dichloroethane	200	MW-4
1,2,4-trichlorobenzene	7	MW-1
1,2-dichloroethene(total)	25	MW-8
acetone	23J	MW-6
benzene	1.2	MW-4
bromodichloromethane	17	MW-6
carbon tetrachloride	1.2	MW-4
chloroethane	1.8	MW-4D
chloroethene	1	MW-4D
chloroform	6	MW-2
cis-1,2-dichloroethene	1,070	MW-4D
cis-1,3-dichloropropene	16	MW-8
dibromochloromethane	7	MW-6
tetrachloroethene	960	MW-4D
toluene	3	MW-7
total xylenes	6	MW-7D
trans-1,2-dichloroethene	23	MW-2
trichloroethene	3,140	MW-4
trichlorofluoromethane	6.1	MW-4
vinyl chloride	5.4	MW-4D

Note:
μg/l - micrograms per liter
ND - Not Detected
NA - Not Analyzed
(a) - Duplicate Sample

* U.S. EPA, 1993, *Screening Site Inspection Site Evaluation - Granville Solvents, Inc.* by PRC Environmental Management, Inc.

TABLE 2-3
GROUNDWATER SAMPLING RESULTS SUMMARY APRIL-MAY 1994*

METHOD	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	EPA 524.2
SAMPLE NUMBER	HP1-1	HP1-2	HP1-3	HP1-4	HP2-1	HP2-2	HP2-3	HP3-1	HP3-2	HP3-3	HP4-1	HP4-2
DATE COLLECTED	4/29/94	4/29/94	4/30/94	4/30/94	5/1/94	5/1/94	5/1/94	5/2/94	5/2/94	5/2/94	5/3/94	5/3/94
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Compound												
dichlorodifluoromethane												
chloromethane	0.5 U	0.5 U	2	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
vinyl chloride	0.5 U	0.5 U	0.6	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
trichlorofluoromethane												
1,1-dichlorethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
acetone	5 U	12	2200	1000 E	860 E	620 E	320 E	33	110	89	120	990 E
carbon disulfide	0.5 U	0.9	0.5	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J	5 U	2 U
methylene chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
trans-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
1,1-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
2,2-dichloropropane												
cis-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
2-butanone	5 U	5 U	5 U	2 J	5 U	5 U	5 U	5 U	5 U	5 U	50 U	20 U
bromochloromethane												
chloroform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
1,1,1-trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	8	8	13	80	33
carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
1,1-dichloropropene												
benzene	0.5 U	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.7	1	0.9	5 U	2 U
1,2-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	140	44
1,2-dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
dibromomethane												
bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
cis-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
4-methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	20 U
toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1	1	2	5 U	2 U
trans-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
1,1,2-trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
tetrachloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
1,3-dichloropropane												
2-hexanone	5 U	5 U	2 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	20 U
dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
1,2-dibromoethane												
chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
1,1,1,2-tetrachloroethane											5 U	
ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
m- & p-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	4 U
o-xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
xylenes (total)												
styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U
isopropylbenzene												
bromobenzene												
1,1,2,2-tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	2 U

Note:
U = This indicates the parameter was not detected.
J = The mass spectrum indicates the presence of the compound, but the calculated concentration is less than the reporting limit.
E = The associated concentration exceeds the calibrated concentration range and is therefore an estimated concentration.
CLP LOW = Method for the analysis of low concentration water for volatile (purgeable) organic compounds, in U.S. EPA Contract Laboratory Program Statement of Work for Low Concentration Water Organic Analysis, OLC01.0, 1992.
ug/l = Micrograms per liter.
* – Metcalf & Eddy, Inc., 1995, Groundwater Monitoring Program Plan for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-3 (Continued)

GROUNDWATER SAMPLING RESULTS SUMMARY APRIL-MAY 1994*

METHOD	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	CLP LOW
SAMPLE NUMBER	HP4-3	HP4-4	HP5-2	HP5-3	HP5-4	HP6-1	HP6-2	HP6-3	HP6-4	HP7-1	HP7-2	HP8-1
DATE COLLECTED	5/4/94	5/4/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/6/94	5/6/94	5/6/94	5/9/94
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Compound												
dichlorodifluoromethane												
chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
vinyl chloride	0.5 U	0.7	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
trichlorofluoromethane												
1,1-dichlorethene	0.5 U	0.5 U	0.4 J	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
acetone	300 E	50	360 E	480 E	240 E	5100	28	170 E	160 E	860	1300 E	3600 E
carbon disulfide	0.5 U	0.5 U	0.7	0.6	0.5 U	50 U	0.3 J	0.5 U	0.5 U	5 U	5 U	1.2 U
methylene chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
trans-1,2-dichloroethene	0.5 U	0.5 U	1.8	0.8	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
1,1-dichloroethane	1.7	0.9	19	8.2	5.6	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
2,2-dichloropropane												
cis-1,2-dichloroethene	0.5 U	0.3 J	56	27	18	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
2-butanone	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U	50 U	50 U	12 U
bromochloromethane												
chloroform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
1,1,1-trichloroethane	15	9.5	34	14	8.8	50 U	0.7	0.8	0.5 U	5 U	5 U	50
carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
1,1-dichloropropene												
benzene	0.5 U	0.2 J	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.6	0.5 U	5 U	5 U	5
1,2-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
trichloroethene	23	13	31	10	5	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	27
1,2-dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
dibromomethane												
bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
cis-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
4-methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U	50 U	50 U	12 U
toluene	0.5 U	0.2 J	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
trans-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
1,1,2-trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
tetrachloroethene	0.5 U	0.5 U	26	8.1	3.9	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	21
1,3-dichloropropane												
2-hexanone	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U	50 U	50 U	12 U
dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U			1.2 U
1,2-dibromoethane										5 U	5 U	
chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
1,1,1,2-tetrachloroethane										5 U	5 U	
ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
m- & p-xylene	1 U	1 U	1 U	1 U	1 U	100 U	1 U	1 U	1 U	10 U	10 U	2.5 U
o-xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
xylenes (total)												
styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U
isopropylbenzene												
bromobenzene												
1,1,2,2-tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	0.5 U	0.5 U	5 U	5 U	1.2 U

Note:

U = This indicates the parameter was not detected.

J = The mass spectrum indicates the presence of the compound, but the calculated concentration is less than the reporting limit.

E = The associated concentration exceeds the calibrated concentration range and is therefore an estimated concentration.

CLP LOW = Method for the analysis of low concentration water for volatile (purgeable) organic compounds, in U.S. EPA Contract Laboratory Program Statement of Work for Low Concentration Water Organic Analysis, OLC01.0, 1992.

ug/l = Micrograms per liter.

* – Metcalf & Eddy, Inc., 1995, Groundwater Monitoring Program Plan for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-3 (Continued)
GROUNDWATER SAMPLING RESULTS SUMMARY APRIL-MAY 1994*

METHOD	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW	CLP LOW
SAMPLE NUMBER	HP8-2	HP8-3	HP9-2	HP9-3	HP9-4	HP10-1	HP10-2	HP10-3	HP10-4	HP11-1	HP11-2	HP11-3
DATE COLLECTED	5/9/94	5/9/94	5/9/94	5/9/94	5/9/94	5/9/94	5/9/94	5/9/94	5/9/94	5/10/94	5/10/94	5/10/94
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Compound												
dichlorodifluoromethane												
chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
vinyl chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
trichlorofluoromethane												
1,1-dichlorethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
acetone	1500 E	900 E	5 U	600 E	150 E	43	48	8	160 E	0.5 U	140	73
carbon disulfide	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	5 U	1 U	0.5 U
methylene chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
trans-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2	1	0.8	0.4 J	0.5 U	1 U	0.5 U
1,1-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3	1	2	1	0.5 U	2	0.5 U
2,2-dichloropropane												
cis-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	2	0.5 U	73	24	19	12	0.5 U	9	5
2-butanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U
bromochloromethane												
chloroform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,1,1-trichloroethane	53 E	34	0.5 U	0.5 U	0.5 U	45	17	12	7	0.5 U	40	21
carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,1-dichloropropene												
benzene	0.6	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J	0.5 U	1 U	0.5 U
1,2-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
trichloroethene	18	11	0.5 U	0.5 U	0.5 U	41	12	9	6	0.5 U	47	24
1,2-dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
dibromomethane												
bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
cis-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
4-methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U
toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
trans-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,1,2-trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
tetrachloroethene	9	5	0.5 U	0.5 U	0.5 U	13	5	3	2	0.5 U	17	9
1,3-dichloropropane												
2-hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U
dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,2-dibromoethane												
chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,1,1,2-tetrachloroethane												
ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
m- & p-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U
o-xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
xylenes (total)												
styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
isopropylbenzene												
bromobenzene												
1,1,2,2-tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U

Note:
U = This indicates the parameter was not detected.
J = The mass spectrum indicates the presence of the compound, but the calculated concentration is less than the reporting limit.
E = The associated concentration exceeds the calibrated concentration range and is therefore an estimated concentration.
CLP LOW = Method for the analysis of low concentration water for volatile (purgeable) organic compounds, in U.S. EPA Contract Laboratory Program Statement of Work for Low Concentration Water Organic Analysis, OLC01.0, 1992.
ug/l = Micrograms per liter.
* - Metcalf & Eddy, Inc., 1995, Groundwater Monitoring Program Plan for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-3 (Continued)

GROUNDWATER SAMPLING RESULTS SUMMARY APRIL-MAY 1994*

METHOD	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	CLP Low	CLP Low	CLP Low
SAMPLE NUMBER	HP12-1	HP12-2	HP12-3	HP12-4	HP13-1	HP13-2	HP13-3	HP14-60	HP13	HP14	HP15
DATE COLLECTED	5/14/94	5/14/94	5/14/94	5/14/94	5/14/94	5/14/94	5/14/94	5/19/94	5/19/94	5/19/94	5/19/94
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Compound											
dichlorodifluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U				
chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
vinyl chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
trichlorofluoromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
1,1-dichlorethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
acetone								9	5 U	5 U	5 U
carbon disulfide									1 U	1 U	1 U
methylene chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U	2 U	2 U
trans-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,1-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
2,2-dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
cis-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
2-butanone									5 U	5 U	5 U
bromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
chloroform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,1,1-trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,1-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,2-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 J	1 U
1,2-dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
dibromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
cis-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
4-methyl-2-pentanone									5 U	5 U	5 U
toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
trans-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,1,2-trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
tetrachloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,3-dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
2-hexanone									5 U	5 U	5 U
dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,2-dibromoethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,1,1,2-tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
m- & p-xylene											
o-xylene											
xylenes (total)	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
isopropylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
bromobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
1,1,2,2-tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,2,3-trichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
n-propylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
2-chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
4-chlorotoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			

Note:

U = This indicates the parameter was not detected.

J = The mass spectrum indicates the presence of the compound, but the calculated concentration is less than the reporting limit.

E = The associated concentration exceeds the calibrated concentration range and is therefore an estimated concentration.

CLP LOW = Method for the analysis of low concentration water for volatile (purgeable) organic compounds, in U.S. EPA Contract Laborat[illegible]ogram Statement of Work for Low Concentration Water Organic Analysis, OLC01.0, 1992

ug/l = [illegible] ams per liter.

* – Met[illegible] Eddy, Inc., 1995, Groundwater Monitoring Program Plan for the Granville Solvents Site [illegible]anville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-3 (Continued)

GROUNDWATER SAMPLING RESULTS SUMMARY APRIL-MAY 1994*

METHOD	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	CLP Low	CLP Low	CLP Low
SAMPLE NUMBER	HP12-1	HP12-2	HP12-3	HP12-4	HP13-1	HP13-2	HP13-3	HP14-60	HP13	HP14	HP15
DATE COLLECTED	5/14/94	5/14/94	5/14/94	5/14/94	5/14/94	5/14/94	5/14/94	5/19/94	5/19/94	5/19/94	5/19/94
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Compound											
tert-butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
1,2,4-trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
sec-butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
1,3-dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,4-dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
p-isopropyltoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
1,2-dichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
n-butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
1,2-dibromo-3-chloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U
1,2,4-trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
hexachlorobutadiene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
naphthalene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
1,2,3-trichlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			

Note:

U = This indicates the parameter was not detected.

J = The mass spectrum indicates the presence of the compound, but the calculated concentration is less than the reporting limit.

E = The associated concentration exceeds the calibrated concentration range and is therefore an estimated concentration.

CLP LOW = Method for the analysis of low concentration water for volatile (purgeable) organic compounds, in U.S. EPA Contract Laboratory Program Statement of Work for Low Concentration Water Organic Analysis, OLC01.0, 1992.

ug/l = Micrograms per liter.

* - Metcalf & Eddy, Inc., 1995, Groundwater Monitoring Program Plan for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

the impacted plume of groundwater and to verify the performance of the groundwater extraction and treatment system. Thirteen new monitoring wells and two piezometers were installed at the site during December 1995 and January 1996. Drilling, monitoring well installation, and construction procedures were presented in the *Monitoring Well Installation Report* (1996). A routine groundwater quality sampling and water level monitoring program were implemented based on the *Groundwater Monitoring Program Plan* (1995).

Following the installation of the monitoring wells and approval by the U.S. EPA of the Quality Assurance Project Plan (QAPP, 1996), 26 monitoring wells were sampled and groundwater was analyzed as required. Analytical results are presented in the *Monitoring Well Installation Report* (1996).

The *Monitoring Well Installation Report* (1996) presents potentiometric surface maps of the Site. In most of the buried valley aquifer, the groundwater is under confining pressure created by overlying clay-rich soils. Water levels in most wells drilled in the aquifer rise to levels of 10 to 20 feet below the ground surface.

Despite minor seasonal fluctuations in the potentiometric surface three distinct zones of pumping (EW-1, EW-2 and the Village of Granville wellfield) are present on each of the above-referenced potentiometric maps. Groundwater divides are evident between each zone of pumping.

Raccoon Creek appears to be largely isolated from the aquifer. This information is based on data obtained from pumping tests which indicated that the Creek does not interact significantly with the aquifer under pumping conditions (*Removal Action Aquifer Pumping Test Report*, 1995). If interaction were present between the Creek and aquifer, the Creek would be a losing stream through the area of the Site based upon relative water levels (*Monitoring Well Installation Report*, 1996). Water added to the aquifer from the stream would tend to diminish the effects of the Village of Granville wells on the aquifer beneath the Site.

Within the aquifer, the vertical hydraulic gradients can be estimated from the new deep monitoring well GSS-MW3D and the paired shallow well GSS-MW3. On October 11, 1996, the groundwater elevations measured in GSS-MW3 (screened from 872 to 882 feet) and GSS-MW3D (screened from 811 to 831 feet) were 896.31 and 896.22, respectively. Thus, a downward vertical head of 0.09 feet was present between GSS-MW3 and GSS-MW3D on October 11, 1996.

Analytical results of the sampling events are presented in the *Monitoring Well Installation Report* (September 1996), and are summarized in Table 2-4.

Impact to groundwater and soil is currently being addressed by the GSS PRP Group with a pump and treat remediation system which has been in operation since December, 1994. The system has contained the groundwater contaminant plume, preventing further migration toward the Village of Granville wellfield and reducing the size and mass of the contaminant plume. Moreover, compounds leaching from the soil have been captured by the on-site extraction well, EW-2.

Two groundwater samples were collected from monitoring well MW-5 and municipal production well PW-2 and analyzed them for conventional water quality parameters. Results for these sample were used in the design of the extraction and treatment system. Results of the analysis are summarized in Table 2-5. The groundwater samples collected from these wells were considered representative of the water quality at the Site (MW-5) and the municipal wellfield (PW-2).

Analytical results of groundwater samples collected from MW-5 and PW-2 indicated hardness levels of 450 mg/l and 410 mg/l, respectively. Water containing hardness greater than 250 mg/l may cause scaling in some treatment processes. Suspended solids levels of 4.7 mg/l and 7 mg/l were reported in the water samples collected from MW-5 and PW-2, respectively. Generally, suspended solids concentrations below 25 mg/l do not require pre-treatment in most treatment processes. Total dissolved solids in water samples collected from MW-5 and PW-2 were 750 mg/l and 510 mg/l, respectively. Concentrations above 100 mg/l normally require pre-treatment in most treatment processes.

Other water quality parameters measured were pH and iron concentrations. Iron concentrations in groundwater collected at MW-5 and PW-2 were 92 μg/l and 1,300 μg/l, respectively. The pH levels at both locations were slightly above neutral. Water from MW-5 had a pH level of 7.1 Standard Units (S.U.) and water from PW-2 had a pH level of 7.2 S.U.

2.3.2 Nature and Extent of Soil Contamination

Soil data have been collected at the Site on three separate occasions. The Ohio EPA conducted investigations between 1990 and 1993. The GSS PRP Group undertook investigations in the beginning of 1994 and again in the beginning of 1996. The results of each of these efforts are discussed below.

TABLE 2-4
GROUNDWATER SAMPLING RESULTS SUMMARY – 1996*

Sample Number	MW-1	MW-2	MW-2D	MW-3	MW-4D	MW-4D2	MW-5	MW-5(a)
Date Collected	5/13/96	5/8/96	5/8/96	5/8/96	5/8/96	5/8/96	5/13/96	5/13/96
Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Parameters								
1,1,1-trichloroethane	450 J	NS	350	NS	110	0.5 U	0.7	0.8
1,1,2,2-tetrachloroethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
1,1,2-trichloroethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
1,1-dichloroethene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
1,1-dichloroethane	5 U	NS	17 U	NS	27	0.5 U	0.5 U	0.5 U
1,2,3-trichlorobenzene	NA							
1,2,4-trichlorobenzene	NA							
1,2-dichlorobenzene	NA							
1,2-dichloroethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
1,2-dichloroethene(total)	NA							
1,2-dichloropropane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
1,4-dichlorobenzene	NA							
2-butanone	50 U	NS	170 U	NS	84 U	5 U	5 U	5 U
2-hexanone	50 U	NS	170 U	NS	84 U	5 U	5 U	5 U
4-methyl-2-pentanone	50 U	NS	170 U	NS	84 U	5 U	5 U	5 U
acetone	50 U	NS	170 U	NS	84 U	5 U	5 U	5 U
benzene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
bromodichloromethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
bromoform	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
bromomethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
carbon disulfide	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
carbon tetrachloride	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
chlorobenzene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
chloroethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
chloroethene	NA							
chloroform	5 U	NS	17 U	NS	8 U	5	0.5 U	0.5 U
chloromethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
cis-1,2-dichloroethene	5 U	NS	250	NS	150	0.5 U	0.5 U	0.5 U
cis-1,3-dichloropropene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
dibromochloromethane	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
ethylbenzene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
methylene chloride	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
m- & p-xylene	NA							
o-xylene	NA							
styrene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
tetrachloroethene	74	NS	430	NS	110	0.5 U	0.5 U	0.5 U
toluene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
total xylenes	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
trans-1,2-dichloroethene	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
trans-1,3-dichloropropen	5 U	NS	17 U	NS	8 U	0.5 U	0.5 U	0.5 U
trichloroethene	230	NS	590	NS	280	0.5 U	0.5 U	0.5 U
trichlorofluoromethane	NA							
vinyl chloride	5 U	NS	17 U	NS	11	0.5 U	0.5 U	0.5 U

NOTE:

µg/l – Micrograms per liter

(a) – Duplicate of MW-1 on 1/30/91

J – The mass spectrum indicates the presence of the compound, but calculated result is less than the method specified reporting limit.

U – This indicates the parameter was not detected.

NA – Not Analyzed

ND – Not Detected

NS – Not Sampled

* – Metcalf & Eddy, Inc., 1996, Monitoring Well Installation Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-4 (Continued)
GROUNDWATER SAMPLING RESULTS SUMMARY - 1996*

Sample Number	MW-6	MW-6D	MW-7	MW-7D	MW-8	MW-8D
Date Collected	5/8/96	5/14/96	5/13/96	5/8/96	5/9/96	5/14/96
Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Parameters						
1,1,1-trichloroethane	380	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,1,2,2-tetrachloroethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,1,2-trichloroethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,1-dichloroethene	10 U	0.5 U	0.5 U	0.5 U	5	0.5 U
1,1-dichloroethane	10 U	0.5 U	0.5 U	0.5 U	3	0.5 U
1,2,3-trichlorobenzene						
1,2,4-trichlorobenzene						
1,2-dichlorobenzene						
1,2-dichloroethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,2-dichloroethene(total)						
1,2-dichloropropane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
1,4-dichlorobenzene						
2-butanone	100 U	5 U	5 U	5 U	14	5 U
2-hexanone	100 U	5 U	5 U	5 U	13 U	5 U
4-methyl-2-pentanone	100 U	5 U	5 U	5 U	13 U	5 U
acetone	100 U	5 U	5 U	5 U	13 U	5 U
benzene	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
bromodichloromethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
bromoform	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
bromomethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
carbon disulfide	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
carbon tetrachloride	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
chlorobenzene	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
chloroethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
chloroethene						
chloroform	10 U	0.5 U	0.5 U	5	1 U	0.5 U
chloromethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
cis-1,2-dichloroethene	10 U	0.5 U	0.5 U	0.5 U	48	0.5 U
cis-1,3-dichloropropene	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
dibromochloromethane	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
ethylbenzene	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
methylene chloride	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
n- & p-xylene						
o-xylene						
styrene	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
tetrachloroethene	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
toluene	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
total xylenes	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
trans-1,2-dichloroethene	10 U	0.5 U	0.5 U	0.5 U	4	0.5 U
trans-1,3-dichloropropen	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
trichloroethene	78	0.4 J	0.5 U	0.5 U	1 U	0.5 U
trichlorofluoromethane						
vinyl chloride	10 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U

NOTE:

µg/l - Micrograms per liter

(a) - Duplicate of MW-1 on 1/30/91

J - The mass spectrum indicates the presence of the compound, but calculated result is less than the method specified reporting limit.

U - This indicates the parameter was not detected.

NA - Not Analyzed

ND - Not Detected

NS - Not Sampled

* - Metcalf & Eddy, Inc., 1996, Monitoring Well Installation Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-4

GROUNDWATER SAMPLING RESULTS SUMMARY - 1996*

Method	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2
Sample Number	GSS-MW1	GSS-MW2	GSS-MW3	GSS-MW3D	GSS-MW4	GSS-MW5	GSS-MW5(a)	GSS-MW6	GSS-MW7	GSS-MW8
Date Collected	5/9/96	5/8/96	5/13/96	5/13/96	5/13/96	5/9/96	5/9/96	5/9/96	5/13/96	5/9/96
Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Parameters										
1,1,1-trichloroethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-tetrachloroethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-trichloroethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-dichloroethene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-dichloroethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-trichlorobenzene										
1,2,4-trichlorobenzene										
1,2-dichlorobenzene										
1,2-dichloroethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-dichloroethene(total)										
1,2-dichloropropane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-dichlorobenzene										
2-butanone	7 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-hexanone	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-methyl-2-pentanone	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
acetone	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
benzene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bromodichloromethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bromoform	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bromomethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
carbon disulfide	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
carbon tetrachloride	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chlorobenzene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chloroethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chloroethene										
chloroform	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chloromethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-dichloroethene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-dichloropropene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
dibromochloromethane	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ethylbenzene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
methylene chloride	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m- & p-xylene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
o-xylene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
styrene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
tetrachloroethene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
toluene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
total xylenes		0.5 U	0.5 U							
trans-1,2-dichloroethene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-dichloropropen	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trichloroethene	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trichlorofluoromethane										
vinyl chloride	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

NOTE:

µg/l - Micrograms per liter

(a) - Duplicate of MW-1 on 1/30/91

J - The mass spectrum indicates the presence of the compound, but calculated result is less than the method specified reporting limit.

U - This indicates the parameter was not detected.

NA - Not Analyzed

ND - Not Detected

NS - N--* Sampled

* - f & Eddy, Inc., 1996, Monitoring Well Installation Report for the Granville Solvents Site in Grar Ohio, fo. ranville Solvents Site PRP Group.

TABLE 2-4

GROUNDWATER SAMPLING RESULTS SUMMARY - 1996*

Method	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2
Sample Number	GSS-MW9	GSS-MW10	GSS-MW11	GSS-MW12	GSS-MW13	GSS-MW14
Date Collected	5/9/96	5/9/96	5/13/96	5/8/96	5/8/96	5/9/96
Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Parameters						
1,1,1-trichloroethane	0.5 U	0.5 U	4 U	0.5 U	0.5 U	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-trichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-trichlorobenzene						
1,2,4-trichlorobenzene						
1,2-dichlorobenzene						
1,2-dichloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-dichloroethene(total)						
1,2-dichloropropane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-dichlorobenzene						
2-butanone	5 U	5 U	5 U	5 U	5 U	5 U
2-hexanone	5 U	5 U	5 U	5 U	5 U	5 U
4-methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U
acetone	5 U	5 U	5 U	5 U	5 U	5 U
benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bromodichloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bromoform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
bromomethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
carbon disulfide	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
carbon tetrachloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chlorobenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chloroethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chloroethene						
chloroform	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
chloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-dichloropropene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
dibromochloromethane	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
methylene chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m- & p-xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
o-xylene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
styrene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
tetrachloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
toluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
total xylenes						
trans-1,2-dichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-dichloropropen	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trichloroethene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trichlorofluoromethane						
vinyl chloride	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

NOTE:
µg/l - Micrograms per liter
(a) - Duplicate of MW-1 on 1/30/91
J - The mass spectrum indicates the presence of the compound, but calculated result is less than the method specified reporting limit.
U - This indicates the parameter was not detected.
NA - Not Analyzed
ND - Not Detected
NS - Not Sampled
* - Metcalf & Eddy, Inc., 1996, Monitoring Well Installation Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-5
GROUNDWATER QUALITY DATA

Test Name	Analytical Method	PW-2 Result Units	MW-5 Result Units
Bicarbonate, HCO_3	-	300 mg/l	340 mg/l
Biological Oxygen Demand	Std M-5210B[2]	<2.2 mg/l	<2.2 mg/l
Calcium	215.1[1]	93,000 μg/l	110,000 μg/l
Chemical Oxygen Demand	410.4[1]	<20 mg/l	<20 mg/l
Chloride	Std M-4500-Cl B_2	62 mg/l	110 mg/l
Conductivity	Std M-2510B[2]	820 μmhos/cm	1,100 μmhos/cm
Hardness	130.2[1]	410 mg/l	450 mg/l
Iron	236.1[1]	1,300 μg/l	92 μg/l
Manganese	243.1[1]	130 μg/l	<10 μg/l
Nitrate	353.2[1]	0.03 mg/l	3 mg/l
pH	150.1[1]	7.2 S.U.	7.1 S.U.
Sulfate	375.4[1]	58 mg/l	50 mg/l
Suspended Solids	160.2[1]	7 mg/l	4.7 mg/l
Total Alkalinity	Std M-2320B[2]	300 mg/l	340 mg/l
Total Dissolved Solids	160.1[1]	510 mg/l	750 mg/l
Total Organic Carbon	415.1[1]	8.3 mg/l	8.9 mg/l

1 Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March 1983.

2 Standard Methods for the Examination of Water and Wastewater, 17th Edition, 1989.

2.3.2.1 Soil Data from 1990 to 1993

Complete documentation of the soil boring program and of drilling and installation of MW-1, MW-2, MW-3, and MW-4 by the Ohio EPA is unavailable. The Ohio EPA's well logs were not filed with the Ohio Department of Natural Resources (ODNR) and have not been provided in public documents. The findings reported below are based on the analytical results provided as referenced.

During June 1991, Compliance Solutions, Inc., was retained by the Ohio EPA to install five groundwater monitoring wells. Compliance Solutions (1992) reported that monitoring wells MW-4D, MW-5, MW-7 and MW-7D were installed between June 26 and June 28, 1991. Monitoring well MW-6 was installed in October, 1991. These wells reportedly were installed using 4.5" hollow stem augers and continuous split-spoon samples were collected for each well. During the installations of monitoring wells MW-2D, MW-4D2, MW-6D, MW-8, MW-8D, and MW-P1 in May of 1992 (Compliance Solutions, 1993), soil samples were collected from the surface down to approximately forty feet below ground surface. The soil samples reportedly were collected using a split-spoon sampler. The samples were sent to an Ohio EPA contract laboratory and analyzed for VOCs. Total VOC concentrations were detected as high as 2,490 μg/kg in a soil sample collected from MW-P1 at three feet below ground surface. Results of the investigation are summarized in Table 2-6.

2.3.2.2 Soil Data from April and May 1994

During April and May, 1994, additional soil investigations were conducted by M&E to further define the extent of the impacted soils at the Site (*Work Plan for the Removal Action*, 1995). Soil samples were collected at two-foot depth intervals using a Geoprobe® soil sampler until the groundwater table was encountered. Soil samples were also collected using two-foot, split-spoon samplers at locations where groundwater was to be collected using the Hydropunch®. Results of the analysis from the laboratory are summarized in Table 2-7 below.

2.3.2.3 Soil Data from April 1996 to Present

Pursuant to the requirements of the AOC and the *Design Technical Memorandum for the Remediation of Impacted Soils* (DTM) which was approved by U.S. EPA in February 1996, an investigation was implemented in April 1996 to obtain physical and chemical soil data to evaluate treatment technologies

TABLE 2-6
SOIL SAMPLING RESULTS SUMMARY 1990-1993*

Parameter	Maximum Concentration Detected (μg/kg)	Locations with Maximum Concentration Detected (see Figure 2)
benzene	3,800	NW Corner of Warehouse Building
ethylbenzene	87,700	NW Corner of Warehouse Building
cis-1,2-dichloroethene	3,630	NW Corner of Warehouse Building
methylene chloride	10,800	NW Corner of Warehouse Building
tetrachloroethene	204,000	NW Corner of Warehouse Building
toluene	160,600	NW Corner of Warehouse Building
total xylenes	297,300	NW Corner of Warehouse Building
trichloroethene	202,300	NW Corner of Warehouse Building
1,1-dichloroethane	153	Pit in Limehouse
1,1-dichloroethene	124	Pit in Limehouse
1,1,1-trichloroethane	242,900	NW Corner of Warehouse Building

* U.S. EPA, 1993, *Screening Site Inspection Site Evaluation - Granville Solvents, Inc.* by PRC Environmental Management, Inc.

TABLE 2-7
SOIL SAMPLING RESULTS SUMMARY APRIL-MAY 1994*

Date Collected Sample Number Depth (Feet) Units	5/1/94 SS-10 4-6 µg/kg		5/2/94 SS-15 6-8 µg/kg		5/2/94 SS-19 12-14 µg/kg		5/2/94 SS-20 2-4 µg/kg		5/2/94 SS-30 20-22 µg/kg		5/3/94 SS-31 12-14 µg/kg		5/3/94 SS-39 20-22 µg/kg		5/3/94 SS-43 12-14 µg/kg	
Compound																
chloromethane	12	U	13	U	12	U	12	U	62	U	12	U	1400	U	11	U
vinyl chloride	12	U	13	U	12	U	12	U	62	U	12	U	1400	U	11	U
bromomethane	12	U	13	U	12	U	12	U	62	U	12	U	1400	U	11	U
chloroethane	12	U	13	U	12	U	12	U	62	U	12	U	1400	U	11	U
1,1-dichloroethene	6	U	6	U	6	U	6	U	13	J	6	U	700	U	6	U
acetone	12	U	32	U	12	U	12	U	62	U	12	U	1400	U	8	J
carbon disulfide	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
methylene chloride	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
trans-1,2-dichloroethene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
1,1-dichloroethene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
cis-1,2-dichloroethene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
2-butanone	12	U	5	J	12	U	12	U	62	U	12	U	1400	U	11	U
chloroform	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
1,1,1-trichloroethane	6	U	6	U	6	U	6	U	200	U	6	U	380	J	6	U
carbon tetrachloride	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
benzene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
1,2-dichloroethane	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
trichloroethene	6	U	6	U	1	J	6	U	1300	U	6	U	2400	U	6	U
1,2-dichloropropane	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
bromodichloromethane	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
cis-1,3-dichloropropene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
4-methyl-2-pentanone	12	U	13	U	12	U	12	U	62	U	12	U	1400	U	11	U
toluene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
trans-1,3-dichloropropene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
1,1,2-trichloroethane	6	J	6	U	6	U	6	U	31	U	6	U	700	U	6	U
tetrachloroethene	5	U	6	U	2	J	6	U	230	U	6	U	6100	U	6	U
2-hexanone	12	U	13	U	12	U	12	U	62	U	12	U	1400	U	11	U
dibromochloromethane	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
chlorobenzene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
ethylbenzene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
m- & p-xylene	12	U	13	U	12	U	12	U	62	U	12	U	1400	U	11	U
o-xylene	6	U	6	U	6	U	6	U	31	U	6	U	700	U	6	U
styrene	6	U	6	U	6	U	6	U	31		6	U	700	U	6	U
bromoform	6	U	6	U	6	U	6	U	31		6	U	700		6	U
1,1,2,2-tetrachloroethane	6		6	U	6	U	6	U	31		6	U	700		6	U

Note:
U - Not Detected. The number represents the method detection limit.
J - The mass spectrum indicates the presence of the compound, but the calculated concentration is less than the reporting limit.
E - The associated concentration exceeds the calibrated concentration range and is therefore an estimated concentration.
µg/Kg - Micrograms per kilogram.
* - Metcalf & Eddy, Inc., 1995, Groundwater Monitoring Program Plan for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents PRP Group.

and development of the EE/CA. The DTM (1995) detailed the plan for this investigation. The results of this investigation have been provided to U.S. EPA in the *Soil Data Report* (1996).

Soil borings were drilled at 30 locations on the site and soil samples were collected for chemical analysis. The DTM specified that 27 borings would be drilled and sampled from a 50- x 50-foot grid. Actual drilling locations approximated the center of each grid space as access allowed. Three additional borings (SB-28, SB-29, and SB-30) were drilled and sampled as preliminary analytical results from SB-08 identified impacted soil.

All samples obtained during this drilling program were analyzed for VOCs (Method SW-8260). At eight of these locations samples were analyzed for SVOCs (Method SW-8270) and RCRA metals (SW-6010/7000). Background samples were collected from seven boring locations near the Site. Background samples were analyzed for the eight RCRA metals using the same analytical methods listed above. The chemical data were presented in the *Soil Data Report* (1996).

Soil samples were collected at six soil boring locations and analyzed for physical parameters (particle size, Atterburg limits, USCS classification, moisture content, specific gravity, cation exchange capacity, bulk density, redox potential (Eh), total organic carbon (TOC), soil pH, and flexible wall permeability). Results of this testing were reported in the *Soil Data Report* (September 1996 and December 1996).

As reported in the *Soil Data Report* (1996), the chemicals that were detected in Site soils are listed on Table 2-8 below. Figures 7-14 illustrate the results in map view.

Figure 7 shows the areal distribution of chlorinated and nonchlorinated VOCs at a depth of two to four feet. At this depth, the highest concentrations were detected in SB-26. All of the detections were clustered among the Site buildings with the exception of a detection of tetrachloroethene (200 μg/kg) at SB-08 in the southeast corner of the Site.

Figure 8 shows the areal distribution at a depth of six to eight feet. The highest concentration of chlorinated and nonchlorinated VOCs was clustered around the Site buildings and fill area with concentrations reported in the borings directly to the north (SB-16 and SB-22) and east (SB-17) of the fill area.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB1	SB1	SB1	SB2	SB2	SB2	SB2	SB3	SB3	SB3	SB3
Depth	2–4'	6–8'	12–14'	2–4'	6–8'	12–14'	18–20'	2–4'	6–8'	12–14'	18–20'
Date Collected	4/22/96	4/22/96	4/22/96	4/22/96	4/22/96	4/26/96	4/22/96	4/10/96	4/10/96	4/10/96	4/10/96
Parameter											
Chloromethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Vinyl Chloride	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Bromomethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Chloroethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Acetone	13 U	12 U	12 U	12 U	11 U	12 UJ	11 UJ	12 U	12 U	12 U	11 U
1,1–Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
trans–1,2–Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Carbon Disulfide	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Methylene Chloride	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
1,1–Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
1,2–Dichloroethene (total)	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
cis–1,2–Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
2–Butanone	13 U	12 U	12 U	12 U	11 U	12 UJ	11 UJ	12 U	12 U	12 U	11 U
Chloroform	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
1,1,1–Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	1 J
Carbon Tetrachloride	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
1,2–Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Benzene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Trichloroethene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	2 J
1,2–Dichloropropane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
4–Methyl–2–Pentanone	13 U	12 U	12 U	2 J	11 U	12 UJ	11 UJ	12 U	12 U	12 U	11 U
cis–1,3–Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Toluene	6 U	6 J	10 J	6 U	12	2 J	6 UJ	6 U	6 U	6 U	1 J
trans–1,3–Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
1,1,2–Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
2–Hexanone	13 U	12 U	12 U	12 U	11 U	12 UJ	11 UJ	12 U	12 U	12 U	11 U
Tetrachloroethene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Dibromochloromethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Total Xylenes	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	1 J
Styrene	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
Bromoform	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
1,1,2,2–Tetrachloroethane	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U

U – Not Detected. The number represents the method detection limit.
J – Estimated Value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-6
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB4	SB4(dup)	SB4	SB4	SB4	SB5	SB5	SB5	SB5	SB6	SB6	SB6	SB6
Depth	2-4'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'
Date Collected	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/9/96	4/9/96	4/9/96	4/9/96
Parameter													
Chloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Vinyl Chloride	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	4 J	6 U
Bromomethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Chloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Acetone	12 U	12 U	15	12 U	12 U	12 U	25	12 U	22 U	11 U	12 U	30 J	13
1,1-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
trans-1,2-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	2 J	6 U
Carbon Disulfide	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Methylene Chloride	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
1,1-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	23 J	6 U
cis-1,2-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	21 J	6 U
2-Butanone	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U	22 U	11 U	12 U	11 U	12 U
Chloroform	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	13 U	6 U	6 U	6 U	6 U
1,1,1-Trichloroethane	6 U	6 U	6 U	6 U	5 J	2 J	6 U	21	29	6 U	6 U	6 U	6 U
Carbon Tetrachloride	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
1,2-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Benzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Trichloroethene	6 U	6 U	6 U	2 J	13	6 U	6 U	65	240	6 U	6 U	6 U	6 U
1,2-Dichloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
4-Methyl-2-Pentanone	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U	22 U	11 U	12 U	11 U	12 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Toluene	6 U	6 U	6 U	6 U	1 J	6 U	6 U	6 U	11 U	6 U	6 U	2 J	6 U
trans-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
2-Hexanone	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U	22 U	11 U	12 U	11 U	12 U
Tetrachloroethene	6 U	6 U	6 U	6 U	1 J	3 J	6 U	10	44	6 U	6 U	6 U	6 U
Dibromochloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Total Xylenes	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Styrene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
Bromoform	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	11 U	6 U	6 U	6 U	6 U

U – Not Detected. The number represents the method detection limit.
J – Estimated Value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB7	SB7	SB7	SB7	SB8	SB8	SB8	SB8	SB9	SB9	SB9	SB9
Depth	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'
Date Collected	4/9/96	4/9/96	4/9/96	4/9/96	4/9/96	4/9/96	4/9/96	4/9/96	4/24/96	4/24/96	4/24/96	4/24/96
Parameter												
Chloromethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Vinyl Chloride	5 U	6 U	6 U	30	19 U	6 U	6 U	1 J	6 UJ	6 UJ	7 UJ	6 UJ
Bromomethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Chloroethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Acetone	11 U	12 U	13 U	58 U	38 U	12 U	12 U	28	9 J	14 J	20 J	6 UJ
1,1-Dichloroethene	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
trans-1,2-Dichloroethene	5 U	6 U	6 U	21 J	19 U	6 U	6 U	1 J	6 UJ	6 UJ	7 UJ	6 UJ
Carbon Disulfide	5 U	6 U	6 U	29 U	19 U	6 U	6 U	12	6 UJ	6 UJ	7 UJ	39 J
Methylene Chloride	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
1,1-Dichloroethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
1,2-Dichloroethene (total)	5 U	6 U	6 U	640	62	1 J	3 J	17	6 UJ	6 UJ	7 UJ	6 UJ
cis-1,2-Dichloroethene	5 U	6 U	6 U	600	61	1 J	3 J	15	6 UJ	6 UJ	7 UJ	6 UJ
2-Butanone	11 U	12 U	13 U	58 U	38 U	12 U	12 U	13 U	12 UJ	12 UJ	14 UJ	12 UJ
Chloroform	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
1,1,1-Trichloroethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	2 J	6 UJ
Carbon Tetrachloride	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
1,2-Dichloroethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Benzene	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Trichloroethene	5 U	1 J	6 U	29 U	74	1 J	5 J	2 J	6 UJ	6 UJ	26 J	6 UJ
1,2-Dichloropropane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Bromodichloromethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
4-Methyl-2-Pentanone	11 U	12 U	13 U	58 U	38 U	12 U	12 U	13 U	12 UJ	12 UJ	14 UJ	12 UJ
cis-1,3-Dichloropropene	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Toluene	5 U	6 U	6 U	29 U	19 U	6 U	2 J	4 J	6 UJ	6 UJ	7 UJ	6 UJ
trans-1,3-Dichloropropene	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
1,1,2-Trichloroethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
2-Hexanone	11 U	12 U	13 U	58 U	38 U	12 U	12 U	13 U	12 UJ	12 UJ	14 UJ	12 UJ
Tetrachloroethene	5 U	1 J	6 U	29 U	240	1 J	2 J	6 U	6 UJ	6 UJ	10 J	6 UJ
Dibromochloromethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Chlorobenzene	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Ethylbenzene	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Total Xylenes	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Styrene	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
Bromoform	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ
1,1,2,2-Tetrachloroethane	5 U	6 U	6 U	29 U	19 U	6 U	6 U	6 U	6 UJ	6 UJ	7 UJ	6 UJ

U – Not Detected. The number represents the method detection limit.
J – Estimated Value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-6
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB10	SB10	SB10	SB10	SB11	SB11	SB11	SB11	SB12	SB12	SB12	SB12
Depth	2–4'	6–8'	12–14'	18–20'	2–4'	6–8'	12–14'	18–20'	2–4'	6–8'	12–14'	18–20'
Date Collected	4/9/96	4/9/96	4/9/96	4/9/96	4/18/96	4/18/96	4/18/96	4/9/96	4/9/96	4/9/96	4/9/96	4/9/96
Parameter												
Chloromethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Vinyl Chloride	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Bromomethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Chloroethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Acetone	11 U	12 U	29	61 J	12 U	12 U	84	1500 UJ	12 U	13 U	11 U	42
1,1-Dichloroethene	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
trans-1,2-Dichloroethene	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Carbon Disulfide	6 U	6 U	6 U	24 J	6 U	6 U	7 J	780 UJ	6 U	6 U	6 U	1 J
Methylene Chloride	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
1,1-Dichloroethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	6 U	6 U	2 J	6 UJ	6 U	6 U	65	4800 J	6 U	6 U	3 J	6 U
cis-1,2-Dichloroethene	6 U	6 U	2 J	6 UJ	6 U	6 U	64	4600 J	6 U	6 U	3 J	6 U
2-Butanone	11 U	12 U	12 U	12 UJ	12 U	12 U	64 U	1500 UJ	12 U	13 U	11 U	12 U
Chloroform	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
1,1,1-Trichloroethane	6 U	6 U	17	6 UJ	6 U	6 U	15 J	780 UJ	6 U	6 U	30	6 U
Carbon Tetrachloride	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
1,2-Dichloroethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Benzene	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Trichloroethene	6 U	6 U	65	6 UJ	2 J	6 U	400	780 UJ	6 U	6 U	69	6 U
1,2-Dichloropropane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Bromodichloromethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	1500 UJ	6 U	6 U	6 U	6 U
4-Methyl-2-Pentanone	11 U	12 U	12 UJ	12 UJ	12 U	12 U	64 U	780 UJ	12 U	13 U	11 U	12 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Toluene	6 U	6 U	6 U	6 UJ	6 U	6 U	28 J	180 J	6 U	2 J	6 U	2 J
trans-1,3-Dichloropropene	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	1500 UJ	6 U	6 U	6 U	6 U
2-Hexanone	11 U	12 U	12 UJ	12 UJ	12 U	12 U	64 U	780 UJ	12 U	13 U	11 U	12 U
Tetrachloroethene	6 U	6 U	6 J	6 UJ	20	6 U	1100	780 UJ	6 U	6 U	73	6 U
Dibromochloromethane	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Chlorobenzene	6 U	6 U	6 U	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 UJ	6 UJ	6 U	6 U	32 U	490 J	6 U	6 U	6 U	6 U
Total Xylenes	6 U	6 U	6 UJ	6 UJ	6 U	6 U	32 U	840 J	6 U	6 U	6 U	6 U
Styrene	6 U	6 U	6 UJ	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
Bromoform	6 U	6 U	6 UJ	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 UJ	6 UJ	6 U	6 U	32 U	780 UJ	6 U	6 U	6 U	6 U

U – Not Detected. The number represents the method detection limit.
J – Estimated Value
UJ – Estimated quantitation limit
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TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB13	SB13	SB13	SB13	SB14	SB14	SB14	SB15	SB15	SB15	SB15
Depth	2–4'	6–8'	14–16'	16–17'	2–4'	6–8'	12–14'	2–4'	6–8'	12–14'	18–20'
Date Collected	4/10/96	4/10/96	4/10/96	4/10/96	4/24/96	4/24/96	4/24/96	4/24/96	4/24/96	4/24/96	4/24/96
Parameter											
Chloromethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Vinyl Chloride	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Bromomethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Chloroethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Acetone	12 U	12 U	15	14	12 UJ	27 J	11 UJ	11 UJ	26 J	57 UJ	27 U
1,1-Dichloroethene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
trans-1,2-Dichloroethene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	2 J	27 UJ	28 UJ	13 U
Carbon Disulfide	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Methylene Chloride	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
1,1-Dichloroethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	5 J	27 UJ	28 UJ	13 U
1,2-Dichloroethene (total)	6 U	6 U	6 U	5 U	6 UJ	6 UJ	1 J	76 J	67 J	6 J	14
cis-1,2-Dichloroethene	12 U	12 U	11 U	5 U	6 UJ	6 UJ	1 J	72 J	65 J	6 J	14
2-Butanone	6 U	6 U	6 U	11 U	12 UJ	12 UJ	11 UJ	11 UJ	55 UJ	57 UJ	27 U
Chloroform	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
1,1,1-Trichloroethane	6 U	6 U	6 U	2 J	6 UJ	6 UJ	18 J	14 J	230 J	43 J	140
Carbon Tetrachloride	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
1,2-Dichloroethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Benzene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Trichloroethene	6 U	6 U	1 J	5 U	6 UJ	6 UJ	39 J	21 J	9300 J	800 J	8300 J
1,2-Dichloropropane	12 U	12 U	11 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Bromodichloromethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
4-Methyl-2-Pentanone	6 U	6 U	6 U	11 U	12 UJ	12 UJ	11 UJ	11 UJ	55 UJ	57 UJ	27 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Toluene	6 U	6 U	1 J	2 J	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
trans-1,3-Dichloropropene	12 U	12 U	11 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
1,1,2-Trichloroethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
2-Hexanone	6 U	6 U	6 U	11 U	12 UJ	12 UJ	11 UJ	11 UJ	55 UJ	57 UJ	27 U
Tetrachloroethene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	3 J	10 J	460 J	260 J	5800 J
Dibromochloromethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Chlorobenzene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Ethylbenzene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Total Xylenes	6 U	6 U	6 U	2 J	6 UJ	6 UJ	6 UJ	6 UJ	8 J	28 UJ	13 U
Styrene	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
Bromoform	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	5 U	6 UJ	6 UJ	6 UJ	6 UJ	27 UJ	28 UJ	13 U

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (μg/kg)

Sample Number	SB16	SB16(dup)	SB16	SB16	SB16	SB17	SB17	SB17	SB17	SB18	SB18(dup)	SB18	SB18	SB18
Depth	2-4'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'	2-4'	2-4'	6-8'	12-14'	18-20'
Date Collected	4/26/96	4/26/96	4/26/96	4/26/96	4/26/96	4/18/96	4/18/96	4/18/96	4/18/96	4/17/96	4/17/96	4/17/96	4/17/96	4/17/96
Parameter														
Chloromethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Vinyl Chloride	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Bromomethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Chloroethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Acetone	12 U	12 U	11 UJ	14 U	14 UJ	12 U	17 U	58 U	55 U	13 U	13 U	13 U	12 U	22 U
1,1-Dichloroethene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
trans-1,2-Dichloroethene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Carbon Disulfide	6 U	6 U	6 UJ	7 U	2 J	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Methylene Chloride	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
1,1-Dichloroethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
1,2-Dichloroethene (total)	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
cis-1,2-Dichloroethene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
2-Butanone	12 U	12 U	11 UJ	14 U	14 UJ	12 U	17 U	58 U	55 U	13 U	13 U	13 U	12 U	22 U
Chloroform	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
1,1,1-Trichloroethane	6 U	6 U	4 J	13	5 J	1 J	96	200	53	6 U	6 U	6 U	3 J	320 J
Carbon Tetrachloride	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
1,2-Dichloroethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Benzene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Trichloroethene	2 J	2 J	36 J	120	74 J	6 U	330	990	120	6 U	6 U	6 U	4 J	92 J
1,2-Dichloropropane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Bromodichloromethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
4-Methyl-2-Pentanone	12 U	12 U	11 UJ	14 U	14 UJ	12 U	17 U	58 U	55 U	13 U	13 U	13 U	12 U	22 U
cis-1,3-Dichloropropene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Toluene	6 U	6 U	14 UJ	20	20 J	6 U	2 J	29 U	14 J	6 U	6 U	6 U	7	8 J
trans-1,3-Dichloropropene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
1,1,2-Trichloroethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
2-Hexanone	12 U	12 U	11 UJ	14 U	14 UJ	12 U	17 U	58 U	55 U	13 U	13 U	13 U	12 U	22 U
Tetrachloroethene	2 J	4 J	51 J	170	190 J	2 J	50	550	1200 J	6 U	6 U	6 U	6 U	8 J
Dibromochloromethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Chlorobenzene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Ethylbenzene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Total Xylenes	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Styrene	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
Bromoform	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 UJ	7 U	7 UJ	6 U	8 U	29 U	27 U	6 U	6 U	6 U	6 U	11 U

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB19	SB19(Dup)	SB19	SB19(Dup)	SB19	SB19	SB20	SB20	SB20	SB20	SB21	SB21	SB21	SB21
Depth	2-4'	2-4'	6-8'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20
Date Collected	4/18/96	4/18/96	4/18/96	4/18/96	4/24/96	4/24/96	4/25/96	4/25/96	4/25/96	4/25/96	4/26/96	4/26/96	4/22/96	4/26/96
Parameter														
Chloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Vinyl Chloride	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Bromomethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Chloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Acetone	12 U	12 U	13 U	13 U	12 U	14 U	12 UJ	12 UJ	73 UJ	11 UJ	12 U	12 U	12 U	11 U
1,1-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
trans-1,2-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Carbon Disulfide	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Methylene Chloride	6 U	6 U	6 U	6 U	6 U	1 J	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	1 J
1,1-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
1,2-Dichloroethene (total)	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
cis-1,2-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
2-Butanone	12 U	12 U	13 U	13 U	12 U	12 U	12 UJ	12 UJ	13 UJ	11 UJ	12 U	12 U	12 U	11 U
Chloroform	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
1,1,1-Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	140 J	22 J	6 U	3 J	36	8
Carbon Tetrachloride	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
1,2-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Benzene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Trichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	10 J	4 J	6 U	6 U	13	21
1,2-Dichloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Bromodichloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
4-Methyl-2-Pentanone	12 U	12 U	13 U	13 U	12 U	12 U	12 UJ	12 UJ	13 UJ	11 UJ	12 U	12 U	12 U	11 U
cis-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Toluene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	8 J	6 U	11 U	15	19
trans-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
1,1,2-Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
2-Hexanone	12 U	12 U	13 U	13 U	12 U	12 U	12 UJ	12 UJ	12 UJ	11 UJ	12 U	12 U	12 U	11 U
Tetrachloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	13	100
Dibromochloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Total Xylenes	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Styrene	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
Bromoform	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 UJ	6 UJ	5 UJ	6 U	6 U	6 U	5 U

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (μg/kg)

Sample Number	SB22	SB22	SB22	SB22	SB23	SB23	SB23	SB23	SB24	SB24	SB24	SB24
Depth	2–4'	6–8'	12–14'	16–20'	2–4'	6–8'	12–14'	16–20'	2–4'	6–8'	12–14'	16–20'
Date Collected	4/26/96	4/26/96	4/26/96	4/26/96	4/15/96	4/15/96	4/15/96	4/15/96	4/12/96	4/12/96	4/12/96	4/12/96
Parameter												
Chloromethane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Vinyl Chloride	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Bromomethane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Chloroethane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Acetone	12 U	46 U	18 UJ	53 UJ	12 U	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,1–Dichloroethene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
trans–1,2–Dichloroethene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Carbon Disulfide	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Methylene Chloride	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
1,1–Dichloroethane	6 U	23 U	9 UJ	11 J	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
1,2–Dichloroethene (total)	6 U	5 J	5 J	49 J	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
cis–1,2–Dichloroethene	6 U	5 J	5 J	47 J	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
2–Butanone	12 U	46 U	18 UJ	53 UJ	12 U	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Chloroform	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	8 U	6 U	5 U
1,1,1–Trichloroethane	6 U	190	44 J	490 J	6 U	6 U	2 J	17	6 U	4 J	6 U	9
Carbon Tetrachloride	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
1,2–Dichloroethane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Benzene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Trichloroethene	1 J	910	360 J	810 J	6 U	6 U	5 U	6 U	6 U	6 U	6 U	6
1,2–Dichloropropane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Bromodichloromethane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
4–Methyl–2–Pentanone	12 U	46 U	18 UJ	53 UJ	12 U	11 U	11 U	11 U	12 U	12 U	11 U	11 U
cis–1,3–Dichloropropene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Toluene	6 U	44	100 J	250 J	6 U	6 U	5 J	57	6 U	6 U	6 U	2 J
trans–1,3–Dichloropropene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
1,1,2–Trichloroethane	6 U	23 U	3 J	12 J	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
2–Hexanone	12 U	46 U	18 UJ	53 UJ	12 U	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Tetrachloroethene	10	2000 J	930 J	5600 J	6 U	6 U	5 U	6 U	6 U	6 U	6 U	3 J
Dibromochloromethane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Chlorobenzene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Ethylbenzene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Total Xylenes	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Styrene	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
Bromoform	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U
1,1,2,2–Tetrachloroethane	6 U	23 U	9 UJ	26 UJ	6 U	6 U	5 U	6 U	6 U	6 U	6 U	5 U

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB25	SB25	SB25	SB26	SB26	SB26	SB26	SB27	SB27	SB27	SB27	SB27	SB27
Depth	2-4'	12-14'	16-20'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'	26-28'	28-30'
Date Collected	4/10/96	4/10/96	4/22/96	4/17/96	4/17/96	4/17/96	4/17/96	4/16/96	4/16/96	4/16/96	4/16/96	4/16/96	4/16/96
Parameter													
Chloromethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Vinyl Chloride	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Bromomethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Chloroethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Acetone	11 U	56 U	60 U	56 J	22 U	54 U	1300 U	21	1400 U	56 U	1300 U	1300 U	1400 U
1,1-Dichloroethene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 UJ	28 U	690 U	690 U	710 U
trans-1,2-Dichloroethene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Carbon Disulfide	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Methylene Chloride	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
1,1-Dichloroethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
1,2-Dichloroethene (total)	6 U	8 J	30 U	8 J	11 U	27 U	670 U	2 J	210 J	10 J	140 J	690 U	710 U
cis-1,2-Dichloroethene	6 U	8 J	30 U	8 J	11 U	27 U	670 U	2 J	200 J	9 J	140 J	690 U	710 U
2-Butanone	11 U	56 U	60 U	58 U	22 U	54 U	1300 U	12 U	1400 U	56 U	1300 U	1300 U	1400 U
Chloroform	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
1,1,1-Trichloroethane	1 J	83	67	93	14	10 J	390 J	3 J	1700	86	630 J	570 J	710 U
Carbon Tetrachloride	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
1,2-Dichloroethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Benzene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Trichloroethene	20	1400 J	940	600 J	200	130	3000	26	11000	1100	5300	1400	710 U
1,2-Dichloropropane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Bromodichloromethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
4-Methyl-2-Pentanone	11 U	56 U	60 U	58 U	22 U	54 U	1300 U	12 U	1400 U	56 U	1300 U	1300 U	1400 U
cis-1,3-Dichloropropene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Toluene	6 U	28 U	36	47	210	45	250 J	9	340 J	12 J	690 U	690 U	710 U
trans-1,3-Dichloropropene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
1,1,2-Trichloroethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	10 J	690 U	690 U	710 U
2-Hexanone	11 U	56 U	60 U	58 U	22 U	54 U	1300 U	12 U	1400 U	56 U	1300 U	1300 U	1400 U
Tetrachloroethene	3 J	50	430	1200 J	920 J	1000 J	18000	15	7000	540 J	5900	9800	220 J
Dibromochloromethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Chlorobenzene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Ethylbenzene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	3600
Total Xylenes	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	44000
Styrene	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
Bromoform	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U
1,1,2,2-Tetrachloroethane	6 U	28 U	30 U	29 U	11 U	27 U	670 U	6 U	710 U	28 U	690 U	690 U	710 U

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
VOLATILE ORGANIC COMPOUNDS (µg/kg)

Sample Number	SB28	SB28	SB28	SB28	SB29	SB29	SB29	SB29	SB30	SB30	SB30	SB30
Depth	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'
Date Collected	4/25/96	4/25/96	4/25/96	4/25/96	4/24/96	4/24/96	4/24/96	4/24/96	4/25/96	4/25/96	4/25/96	4/25/96
Parameter												
Chloromethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Vinyl Chloride	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Bromomethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Chloroethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Acetone	12 U	19 UJ	48 UJ	28 UJ	12 UJ	13 UJ	8 J	74 J	11 UJ	25 UJ	23 UJ	13 UJ
1,1-Dichloroethene	6 U	6 UJ	7 J	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
trans-1,2-Dichloroethene	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Carbon Disulfide	6 U	3 J	260 J	220 J	6 UJ	6 UJ	7 UJ	700 J	5 UJ	6 UJ	6 UJ	2 J
Methylene Chloride	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	2 J	6 UJ	6 UJ	6 UJ
1,1-Dichloroethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
1,2-Dichloroethene (total)	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	5 J	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
cis-1,2-Dichloroethene	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	5 J	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
2-Butanone	12 U	13 UJ	13 UJ	13 UJ	12 UJ	13 UJ	13 UJ	14 J	11 UJ	13 UJ	13 UJ	13 UJ
Chloroform	6 U	2 J	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
1,1,1-Trichloroethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Carbon Tetrachloride	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
1,2-Dichloroethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Benzene	6 U	6 UJ	14 J	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Trichloroethene	6 U	6 UJ	20 J	7 UJ	6 UJ	3 J	7 UJ	7 UJ	5 UJ	4 J	6 J	6 UJ
1,2-Dichloropropane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Bromodichloromethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
4-Methyl-2-Pentanone	12 U	13 UJ	13 UJ	13 UJ	12 UJ	13 UJ	13 UJ	14 UJ	11 UJ	13 UJ	13 UJ	13 UJ
cis-1,3-Dichloropropene	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Toluene	5 J	6 UJ	23 J	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	44 J	4 J	9 UJ	6 UJ
trans-1,3-Dichloropropene	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
1,1,2-Trichloroethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
2-Hexanone	12 U	13 UJ	13 UJ	13 UJ	12 UJ	13 UJ	13 UJ	14 UJ	11 UJ	13 UJ	13 UJ	13 UJ
Tetrachloroethene	6 U	6 UJ	6 UJ	7 UJ	6 UJ	5 J	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Dibromochloromethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Chlorobenzene	6 U	6 UJ	27 J	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	5 J	6 UJ
Ethylbenzene	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Total Xylenes	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Styrene	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
Bromoform	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ
1,1,2,2-Tetrachloroethane	6 U	6 UJ	6 UJ	7 UJ	6 UJ	6 UJ	7 UJ	7 UJ	5 UJ	6 UJ	6 UJ	6 UJ

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
METALS (μg/kg)

Sample ID:	SB-3	SB-3	SB-3	SB-3	SB-5	SB-5	SB-5	SB-5	SB-5	SB-11	SB-11	SB-11	SB-11
Depth	2-4'	6-8'	12-14'	18-20'	2-4'	2-4' Field Dup	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'
Date Collected:	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/18/96	4/18/96	4/18/96	4/18/96
Aluminum	13900 J	11300 J	12400 J	6540 J	15400	17500	13100	4250	4140	18700	7850	12600	6720
Antimony	0.47 J	0.47 J	0.46	2	1.2 J	0.97 J	1 J	0.67 J	1.5 J	0.73 J	0.27 J	7.3 J	0.35 J
Arsenic	16.9	24.5	18.1 J	116 J	28 J	28.3 J	23.9 J	21.9 J	35.3 J	16.1	13.9	185	34.2
Barium	62.8	62.4	59.4 J	52.1 J	107	121	107	57.2	55.3	95	40	61.1	86.4
Beryllium	0.13	0.28	0.29	0.17	0.95 J	1.1 J	0.9 J	0.38 J	0.28 J	0.74	0.46	0.71	0.39
Cadmium	0.06	0.2	0.73 J	1.9 J	0.84	0.78	0.65	0.81	0.85	0.04 U	0.32	1.8	0.38
Calcium	1400 J	1330 J	1780 J	51600 J	9330	8550	6590	84100	107000	2290	659	3400	92500
Chromium	16.8 J	14.8 J	18.2 J	10.2 J	19.9	22.1	16.8	7.5	8.6	20.8	10.4	20	9.4
Cobalt	9.3	8.1	8.9 J	11.5 J	13.8	14.1	12.2	5.8	7.8	11.9	6.7	26.2	6.3
Copper	24	25.8	25.1	34.1	38.5	37.4	33.1	20.5	19.4	23	23.2	46.2	16.9
Iron	27500 J	26600 J	28400 J	59300 J	36600 J	38100 J	31800 J	24300 J	38400 J	28500	22300	112000	20600
Lead	14.7 J	14.0 J	16.1 J	64.3 J	52.4 J	50.1 J	41.5 J	15.1 J	51 J	25.6 J	11.5 J	122 J	19.7 J
Magnesium	2510 J	2100 J	2830 J	23600 J	6700	6350	4620	30500	25000	2860	1490	2410	42500
Manganese	482 J	565 J	474 J	489 J	862	889	858	1260	569	696 J	172 J	1800 J	372 J
Mercury	0.11 U	0.11 U	0.10 U	0.07 U	0.1	0.11	0.10 U	0.09 U	0.09 U	0.09 U	0.10 U	0.24	0.06 U
Nickel	20.3 J	22.7 J	34.1 J	33.3 J	33.5 J	36.1 J	30.2 J	19 J	25.3 J	22.7	19.5	76	16.7
Potassium	1830	1410	2620 J	1810 J	2830 UJ	3260 UJ	2320 UJ	1490 UJ	1220 UJ	2210	1260	2480	2200
Selenium	1.4 J	1.2 J	1.3	2.3	0.83 J	0.82 J	0.62 J	0.36 UJ	2.3 J	0.61 J	0.41 UJ	1.2 J	0.38 UJ
Silver	0.13 U	0.13 U	0.12 U	0.12 U	0.17 U	0.16 U	0.15 U	0.14 U	0.16	0.16 U	0.16 U	0.25	0.3
Sodium	20.6 U	20.2 U	74.3 U	41.5 U	148	145	116	165	70.7	26.3 U	26.4 U	93.3	116
Thallium	0.64	0.58	1.2	1.5	0.60 UJ	0.56 UJ	0.56 UJ	0.49 UJ	0.53 UJ	0.57 U	0.57 U	0.61 U	0.52 U
Vanadium	40.1	32.6	50 J	30.5 J	49.7 J	56.6 J	41.3 J	21.7 J	22.5 J	49.3	24	55	24.9
Zinc	77 J	80.8 J	126 J	167 J	149 J	150 J	116 J	109 J	111 J	76.8	82.5	256	57.5

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Sire PRP Group.

TABLE 2-8
SOILS SAMPLING RESULTS SUMMARY – 1996*
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Number:	SB-3	SB-3	SB-3	SB-3	SB-3	SB-5	SB-5	SB-5	SB-5	SB-5	SB-11	SB-11
Depth:	2-4'	6-8'	6-8' Field Dup	12-14'	18-20'	2-4'	6-8'	6-8' Field Dup	12-14'	18-20'	2-4'	2-4' Field Dup
Date Collected:	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/10/96	4/18/96	4/18/96
Phenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Bis(2-Chloroethyl)ether	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2-Chlorophenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
1,3-Dichlorobenzene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
1,4-Dichlorobenzene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Benzyl Alcohol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
1,2-Dichlorobenzene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2-Methylphenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Bis(2-Chloroisopropyl)ether	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
4-Methylphenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
N-Nitroso-di-n-propylamine	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Hexachloroethane	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Nitrobenzene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Isophorone	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2-Nitrophenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2,4-Dimethylphenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Benzoic Acid	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Bis(2-Chloroethoxy)methane	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2,4-Dichlorophenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
1,2,4-Trichlorobenzene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Naphthalene	410 U	390 U	380 U	390 U	360 U	39 J	390 U	390 U	360 U	370 U	400 U	420 U
4-Chloroaniline	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Hexachlorobutadiene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
4-Chloro-3-Methylphenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2-Methylnaphthalene	410 U	390 U	380 U	390 U	360 U	41 J	390 U	390 U	360 U	370 U	400 U	420 U
Hexachlorocyclopentadiene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2,4,6-Trichlorophenol	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2,4,5-Trichlorophenol	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
2-Chloronaphthalene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2-Nitroaniline	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
Dimethylphthalate	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Acenaphthylene	410 U	390 U	380 U	390 U	360 U	68 J	390 U	390 U	360 U	370 U	400 U	420 U
2,6-Dinitrotoluene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
3-Nitroaniline	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
Acenaphthene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
2,4-Dinitrophenol	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
4-Nitrophenol	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
Dibenzofuran	410 U	390 U	380 U	390 U	360 U	24 J	390 U	390 U	360 U	370 U	400 U	420 U
2,4-Dinitrotoluene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Diethylphthalate	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
4-Chlorophenyl-phenylether	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Fluorene	410 U	390 U	380 U	390 U	360 U	42 J	390 U	390 U	360 U	370 U	400 U	420 U
4-Nitroaniline	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
4,6-Dinitro-2-methylphenol	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
N-Nitrosodiphenylamine	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
4-Bromophenyl-phenylether	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Hexachlorobenzene	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Pentachlorophenol	2000 U	1900 U	1800 U	1900 U	1800 U	1000 U	950 U	950 U	870 U	900 U	1900 U	1000 U
Phenanthrene	410 U	390 U	380 U	390 U	360 U	340 J	390 U	390 U	360 U	370 U	400 U	420 U
Anthracene	410 U	390 U	380 U	390 U	360 U	55 J	390 U	390 U	360 U	370 U	400 U	420 U
Carbazole	410 U	390 U	380 U	390 U	360 U	33 J	390 U	390 U	360 U	370 U	400 U	420 U
Di-n-butylphthalate	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Fluoranthene	410 U	390 U	380 U	390 U	360 U	760	390 U	390 U	360 U	370 U	400 U	420 U
Pyrene	410 U	390 U	380 U	390 U	360 U	530	390 U	390 U	360 U	370 U	400 U	420 U
Butylbenzylphthalate	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
3,3-Dichlorobenzidine	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Benzo(a)anthracene	410 U	390 U	380 U	390 U	360 U	310 J	390 U	390 U	360 U	370 U	400 U	420 U
Chrysene	410 U	390 U	380 U	390 U	360 U	370 J	390 U	390 U	360 U	370 U	400 U	420 U
Bis(2-Ethylhexyl)phthalate	410 U	390 U	380 U	390 U	690	52 J	390 U	390 U	360 U	370 U	400 U	420 U
Di-n-octylphthalate	410 U	390 U	380 U	390 U	360 U	430 U	390 U	390 U	360 U	370 U	400 U	420 U
Benzo(b)fluoranthene	410 U	390 U	380 U	390 U	360 U	290 J	390 U	390 U	360 U	370 U	400 U	420 U
Benzo(k)fluoranthene	410 U	390 U	380 U	390 U	360 U	310 J	390 U	390 U	360 U	370 U	400 U	420 U
Benzo(a)pyrene	410 U	390 U	380 U	390 U	360 U	330 J	390 U	390 U	360 U	370 U	400 U	420 U
Indeno(1,2,3-cd)pyrene	410 U	390 U	380 U	390 U	360 U	210 J	390 U	390 U	360 U	370 U	400 U	420 U
Dibenz(a,h)anthracene	410 U	390 U	380 U	390 U	360 U	110 J	390 U	390 U	360 U	370 U	400 U	420 U
Benzo(g,h,i)perylene	410 U	390 U	380 U	390 U	360 U	270 J	390 U	390 U	360 U	370 U	400 U	420 U

J – Estimated Value
U – Not Detected. The number represents the method detection limit.
UJ – Estimated Quantitation Limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOILS SAMPLING RESULTS SUMMARY - 1996*
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Number:	SB-11	SB-11	SB-14	SB-14	SB-14	SB-18	SB-18	SB-18	SB-18	SB-25	SB-25	SB-25	SB-25
Depth:	6-8'	12-14'	2-4'	6-8'	12-14'	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'
Date Collected:	4/18/96	4/18/96	4/24/96	4/24/96	4/24/96	4/26/96	4/26/96	4/26/96	4/26/96	4/22/96	4/22/96	4/22/96	4/22/96
Phenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Bis(2-Chloroethyl)ether	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2-Chlorophenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
1,3-Dichlorobenzene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
1,4-Dichlorobenzene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Benzyl Alcohol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
1,2-Dichlorobenzene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2-Methylphenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Bis(2-Chloroisopropyl)ether	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
4-Methylphenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
N-Nitroso-di-n-propylamine	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Hexachloroethane	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Nitrobenzene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Isophorone	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2-Nitrophenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2,4-Dimethylphenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Benzoic Acid	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Bis(2-Chloroethoxy)methane	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2,4-Dichlorophenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
1,2,4-Trichlorobenzene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Naphthalene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
4-Chloroaniline	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Hexachlorobutadiene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
4-Chloro-3-Methylphenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2-Methylnaphthalene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Hexachlorocyclopentadiene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2,4,6-Trichlorophenol	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2,4,5-Trichlorophenol	1100 U	2200 U	1900 U	1900 U	1700 U	1900 U	1900 U	1900 U	1800 U	1900 U	1800 U	1800 U	1800 U
2-Chloronaphthalene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2-Nitroaniline	1100 U	2200 U	1900 U	1900 U	1700 U	1900 U	1900 U	1900 U	1800 U	1900 U	1800 U	1800 U	1800 U
Dimethylphthalate	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Acenaphthylene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2,6-Dinitrotoluene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
3-Nitroaniline	1100 U	2200 U	1900 U	780 U	1700 U	780 U	780 U	780 U	1800 U	1900 U	1800 U	1800 U	1800 U
Acenaphthene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2,4-Dinitrophenol	1100 U	2200 U	1900 U	1900 U	1700 U	1900 U	1900 U	1900 U	1800 U	1900 U	1800 U	1800 U	1800 U
4-Nitrophenol	1100 U	2200 U	1900 U	1900 U	1700 U	1900 U	1900 U	1900 U	1800 U	1900 U	1800 U	1800 U	1800 U
Dibenzofuran	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
2,4-Dinitrotoluene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Diethylphthalate	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
4-Chlorophenyl-phenylether	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Fluorene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
4-Nitroaniline	1100 U	2200 U	1900 U	1900 U	1700 U	1900 U	1900 U	1900 U	1800 U	1900 U	1800 U	1800 U	1800 U
4,6-Dinitro-2-methylphenol	1100 U	2200 U	1900 U	1900 U	1700 U	1900 U	1900 U	1900 U	1800 U	1900 U	1800 U	1800 U	1800 U
N-Nitrosodiphenylamine	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
4-Bromophenyl-phenylether	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Hexachlorobenzene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Pentachlorophenol	1100 U	2200 U	1900 U	1900 U	1700 U	1900 U	1900 U	1900 U	1800 U	1900 U	1800 U	1800 U	56 J
Phenanthrene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Anthracene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Carbazole	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Di-n-butylphthalate	400 U	440 U	770 U	51 J	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Fluoranthene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Pyrene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Butylbenzylphalate	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
3,3-Dichlorobenzidine	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Benzo(a)anthracene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Chrysene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Bis(2-Ethylhexyl)phthalate	400 U	440 U	770 U	780 U	720 U	780 U	780 U	40 J	37 J	200 J	200 J	380 U	740 U
Di-n-octylphthalate	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Benzo(b)fluoranthene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	99 J	370 U	380 U	740 U
Benzo(k)fluoranthene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Benzo(a)pyrene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Indeno(1,2,3-cd)pyrene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Dibenz(a,h)anthracene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	390 U	370 U	380 U	740 U
Benzo(g,h,i)perylene	400 U	440 U	770 U	780 U	720 U	780 U	780 U	780 U	720 U	120 J	370 U	380 U	740 U

J - Estimated
U - Not Detected. The number represents the method detection limit.
UJ - Estimated Quantitation Limit
* - **Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.**

TABLE 2-8
SOILS SAMPLING RESULTS SUMMARY – 1996*
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Number:	SB-26	SB-26	SB-26	SB-26	SB-27	SB-27	SB-27	SB-27
	2-4'	6-8'	12-14'	16-20'	2-4'	6-8'	12-14'	16-20'
Date Collected:	4/17/96	4/17/96	4/17/96	4/17/96	4/16/96	4/16/96	4/16/96	4/16/96
Phenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Bis(2-Chloroethyl)ether	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2-Chlorophenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
1,3-Dichlorobenzene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
1,4-Dichlorobenzene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Benzyl Alcohol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
1,2-Dichlorobenzene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2-Methylphenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Bis(2-Chloroisopropyl)ether	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
4-Methylphenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
N-Nitroso-di-n-propylamine	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Hexachloroethane	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Nitrobenzene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Isophorone	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2-Nitrophenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2,4-Dimethylphenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Benzoic Acid	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Bis(2-Chloroethoxy)methane	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2,4-Dichlorophenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
1,2,4-Trichlorobenzene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Naphthalene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
4-Chloroaniline	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Hexachlorobutadiene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
4-Chloro-3-Methylphenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2-Methylnaphthalene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Hexachlorocyclopentadiene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2,4,6-Trichlorophenol	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2,4,5-Trichlorophenol	3700 U	1800 U	1700 U	1700 U	1800 U	1900 U	1800 U	1800 U
2-Chloronaphthalene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2-Nitroaniline	3700 U	1800 U	1700 U	1700 U	1800 U	1900 U	1800 U	1800 U
Dimethylphthalate	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Acenaphthylene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2,6-Dinitrotoluene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
3-Nitroaniline	3700 U	1800 U	360 U	350 U	1800 U	400 U	1800 U	1800 U
Acenaphthene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2,4-Dinitrophenol	3700 U	1800 U	1700 U	1700 U	1800 U	1900 U	1800 U	1800 U
4-Nitrophenol	3700 U	1800 U	1700 U	1700 U	1800 U	1900 U	1800 U	1800 U
Dibenzofuran	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
2,4-Dinitrotoluene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Diethylphthalate	8300	380 U	360 U	350 U	370 U	400 U	370 U	380 U
4-Chlorophenyl-phenylether	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Fluorene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
4-Nitroaniline	3700 U	1800 U	1700 U	1700 U	1800 U	1900 U	1800 U	1800 U
4,6-Dinitro-2-methylphenol	3700 U	1800 U	1700 U	1700 U	1800 U	1900 U	1800 U	1800 U
N-Nitrosodiphenylamine	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
4-Bromophenyl-phenylether	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Hexachlorobenzene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Pentachlorophenol	3700 U	1800 U	1700 U	1700 U	1800 U	1900 U	1800 U	1800 U
Phenanthrene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Anthracene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Carbazole	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Di-n-butylphthalate	760 U	380 U	360 U	350 U	370 U	120 J	370 U	84 J
Fluoranthene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Pyrene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Butylbenzylphalate	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
3,3-Dichlorobenzidine	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Benzo(a)anthracene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Chrysene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Bis(2-Ethylhexyl)phthalate	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Di-n-octylphthalate	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Benzo(b)fluoranthene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Benzo(k)fluoranthene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Benzo(a)pyrene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Indeno(1,2,3-cd)pyrene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Dibenz(a,h)anthracene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U
Benzo(g,h,i)perylene	760 U	380 U	360 U	350 U	370 U	400 U	370 U	380 U

J – Estimated
U – Not Detected. The number represents the method detection limit.
UJ – Estimated Quantitation Limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Site PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
METALS (µg/kg)

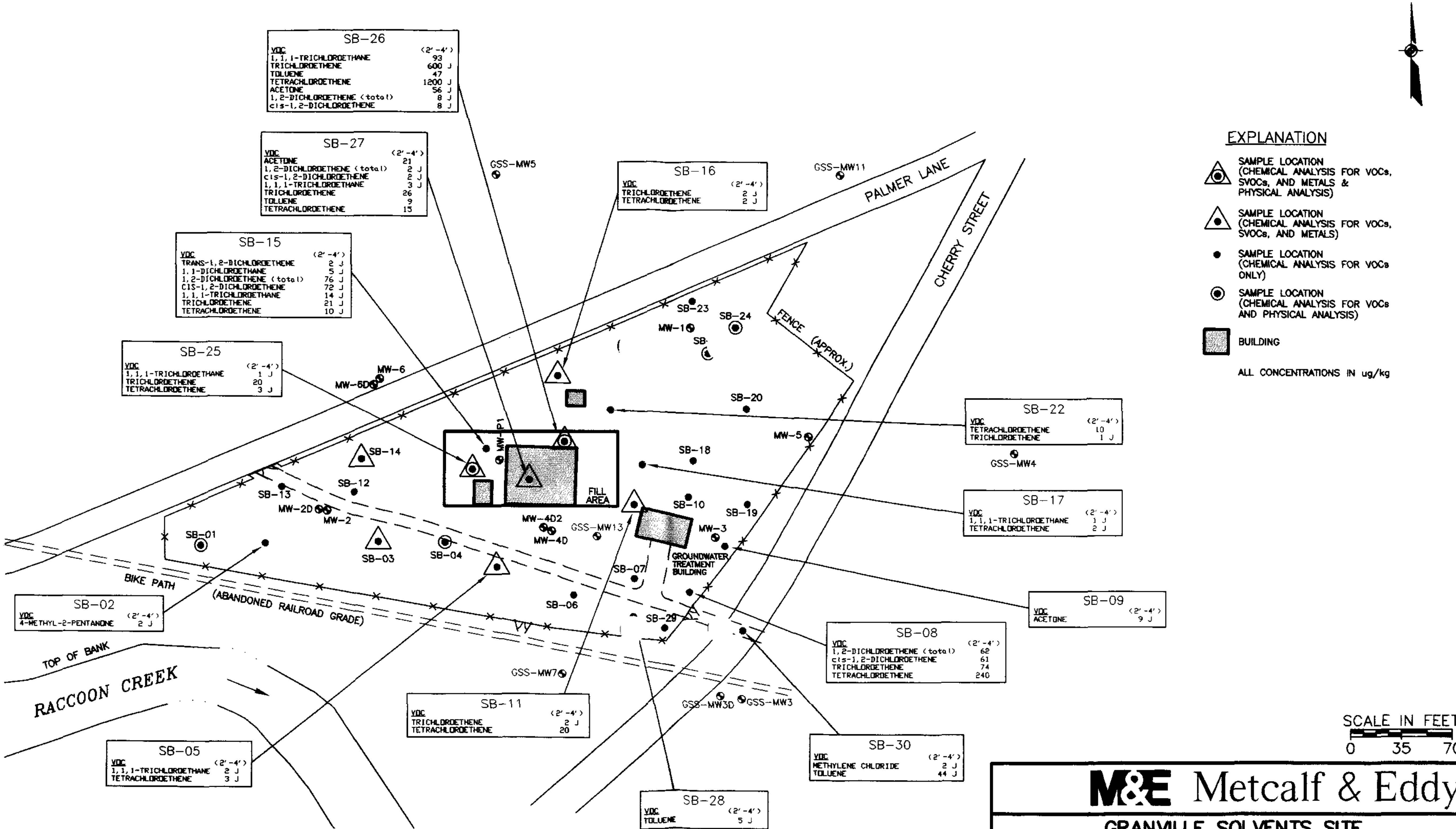
Sample ID:	SB-14	SB-14	SB-14	SB-14	SB-16	SB-16	SB-16	SB-16	SB-16	SB-25	SB-25	SB-25	SB-25
Depth	2-4'	6-8'	12-14'	12-14' Field Dup	2-4'	6-8'	6-8' Field Dup	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'
Date Collected:	4/24/96	4/24/96	4/24/96	4/24/96	4/26/96	4/26/96	4/26/96	4/26/96	4/26/96	4/10/96	4/10/96	4/10/96	4/10/96
Aluminum	8700	6390	5290	4110	9280	4730 J	4700 J	3140 J	2760 J	10100 J	6710 J	7660 J	4350
Antimony	0.53 J	2.0 J	0.53 J	7.3 J	0.33 J	0.29 J	0.26 J	0.48 J	0.23 J	0.47 J	0.91 J	0.47 J	0.35 J
Arsenic	27.9 J	182 J	33 J	149 J	19.9	9.7	8.5	20.9	7.7	16.2	30.5	16.5	10.9 J
Barium	54.6	86.7	73.9	62.5	39.5	33.7	34.1	32	32.6	118	41.1	73.1	77
Beryllium	0.64	0.55	0.45 J	0.35 J	0.56	0.33	0.32 J	0.26 J	0.22 J	0.3	0.17	0.32	0.29
Cadmium	0.17	0.69	0.49	0.25	0.18	0.27	0.27	0.43	0.24	0.2	1.1	0.9	0.58
Calcium	1040	3000	70900 J	31200 J	1070	22300	23900	43200	65600	1350 J	44500 J	34200 J	109000
Chromium	12.2	10.1	8.8 J	6.3 J	13 J	6.7 J	7.0 J	5.7 J	4.6 J	13.5 J	10.3 J	10.9 J	7.3
Cobalt	10.1	14.7	9.5	7.8	9.7	4.3	5.2	4	3.1	10.5	7.9	11.6	6.7
Copper	29.1	41	29.7 J	45.1 J	24.4 J	14.4	12.5	12.9	9.1	16	22.7	22.9	16.5
Iron	32000 J	90000 J	36800 J	33600 J	27800	14000	13300	26300	8940	23400 J	29100 J	23100 J	18100 J
Lead	21.3 J	117 J	18.6 J	395 J	20.1 J	8.4 J	7.1 J	7.8 J	5.8 J	15.2 J	21.1 J	11 J	44.8 J
Magnesium	1930 J	2750 J	18600 J	11500 J	2140	10200 J	9960 J	16100 J	20900 J	1690 J	25300 J	11700 J	29800 J
Manganese	457 J	2190 J	610 J	474 J	439	217	228	399	201	1490 J	835 J	795 J	1500 J
Mercury	0.05 U	0.06	0.09 U	0.09 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1.5	0.10 U	0.11 U	0.04 U
Nickel	28.6 J	61.5 J	30.7 J	23.9 J	24.3 J	14.8 J	15.2 J	14.8 J	8.1 J	20.9 J	30.6 J	42 J	22.8 J
Potassium	1410	1050	1600 J	1050 J	1320 J	1050 J	1160 J	915 J	869 J	1470	1510	2370	1080
Selenium	0.54 J	1.8 J	0.36 U	0.81 J	1.0 J	0.43 J	0.25 J	0.33 J	0.17 UJ	1.2 J	0.69 J	0.58 J	0.28 UJ
Silver	0.14 U	0.15 U	0.14 U	0.11 U	0.11 U	0.2	0.1	0.09	0.07 U	0.12 U	0.12 U	0.12 U	0.11 U
Sodium	66.4	24.6 U	82.8	48.9	19.0 U	74.2	42.6 U	72.3	70	50.5	55.1	35.1	101
Thallium	0.51 UJ	0.53 UJ	0.49 U	0.38 U	0.41 U	0.26 U	0.25 U	0.25 U	0.24 U	0.39 U	0.38 U	1.1	0.39 UJ
Vanadium	26.5	23.6 J	28.1	15.7	26.1	16.1 J	16.5 J	13.1 J	12.6 J	32.3	25.1	27.1	13.1 J
Zinc	120	365 J	89.6 J	69.8 J	91.2 J	61.3 J	44.9 J	53.3 J	33.4 J	86.7 J	123 J	91.8 J	64.0 J

U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Sire PRP Group.

TABLE 2-8
SOIL SAMPLING RESULTS SUMMARY – 1996*
METALS (µg/kg)

Sample ID:	SB-26	SB-26	SB-26	SB-26	SB-27	SB-27	SB-27	SB-27
Depth	2-4'	6-8'	12-14'	18-20'	2-4'	6-8'	12-14'	18-20'
Date Collected:	4/17/96	4/17/96	4/17/96	4/17/96	4/16/96	4/16/96	4/16/96	4/16/96
Aluminum	7980	8430	4300	4410	12900	5250	4740	5690
Antimony	0.56 J	0.14 J	0.41 J	0.55 J	0.53 J	0.40 UJ	0.39 J	0.58 J
Arsenic	74.1 J	19.4 J	12.7 J	24.4 J	17.2 J	26.3	21.8 J	26.1 J
Barium	86.8	76.6	85.8	190	41.5	38.8	33.3	90
Beryllium	0.6	0.54	0.37	0.3	0.62	0.36	0.34	0.41
Cadmium	0.55	0.63	0.95	0.71	0.08 U	0.79	0.49 U	0.88
Calcium	1890	37500	96100	76300	7800	37000 J	78900	26100
Chromium	14	11.6	7.2	10.7	17.2	7.8	7.8	10.3
Cobalt	9.9	9.0	5.2	6.1	7.8	8.3	6.2	38.5
Copper	27.2	26.3	32.1	18	31	26.3	24.5	23.9
Iron	54700 J	26600 J	30100 J	27600 J	28600 J	26200	21900 J	32500 J
Lead	17.1 J	17.4 J	7.7 J	12.1 J	13.5 J	19.2 J	13.9 J	38.8 J
Magnesium	2510	11700	25600	21400	3960	19100 J	31000	11400
Manganese	356	336	829	419	153	470	373	1700
Mercury	0.07 U	0.10 U	0.08 U	0.05 U	0.06 U	0.11 U	0.05 U	0.08 U
Nickel	44.4	27.2	27.4	19	26	30.7	18.3	49.8
Potassium	1650	2230	1110	1540	2140	959	1290	1330
Selenium	1.0 J	0.41 J	0.34 UJ	0.33 UJ	0.38 U	0.35 U	0.36 UJ	0.39 J
Silver	0.13 U	0.14 U	0.13 U	0.13 U	0.15 U	0.13 U	0.14 U	0.14 U
Sodium	52.2	86.7	88.9	25.2	101	111	105	85.9
Thallium	0.46 U	0.52 U	0.48 U	0.46 U	0.55	0.48 U	0.50 U	0.49 U
Vanadium	28.3	30.6	20.4	18.7	40.4	20.4	22	20.9
Zinc	97.2	119	127	70.3	86.4	162	75.6	89.7

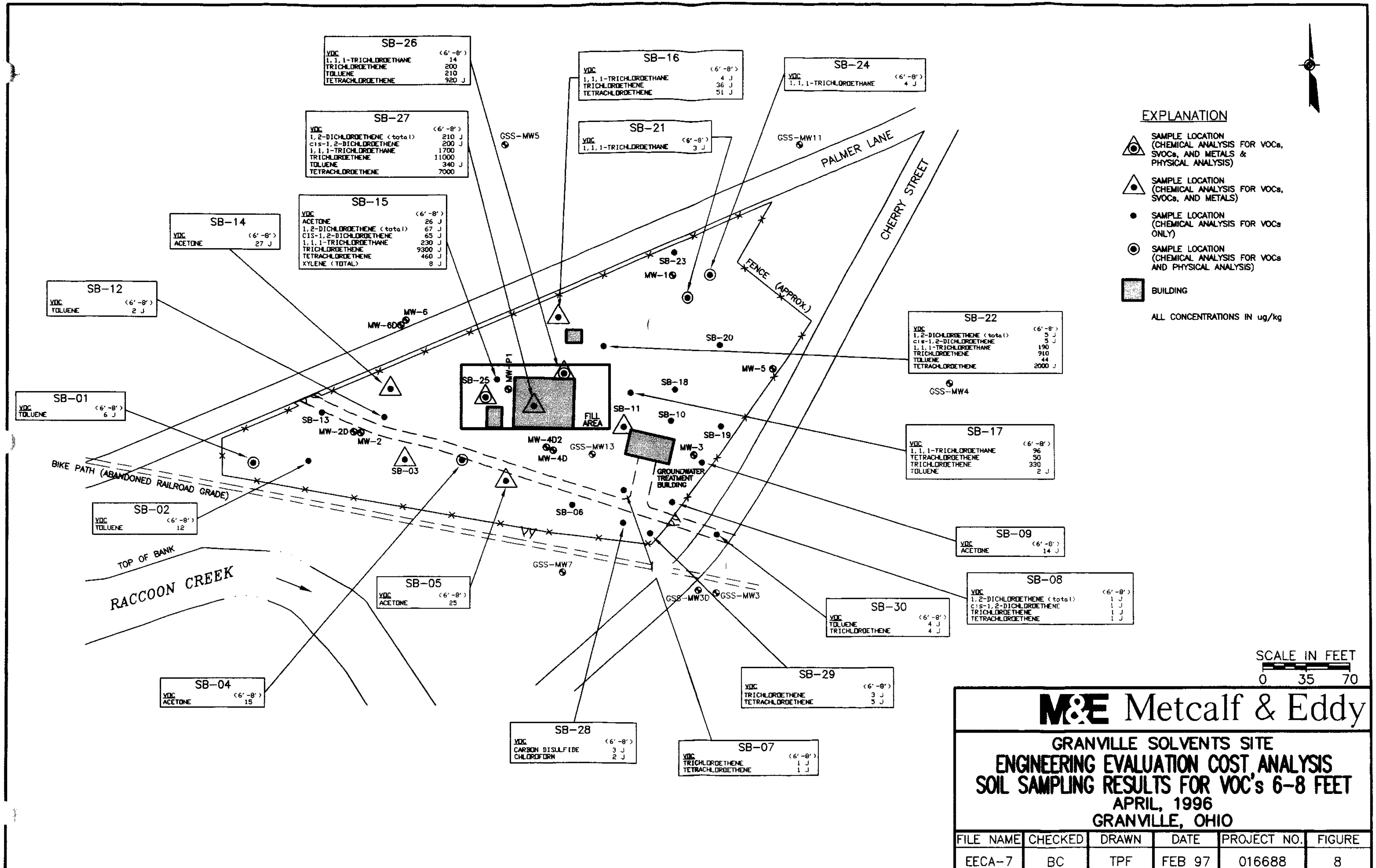
U – Not Detected. The number represents the method detection limit.
J – Estimated value
UJ – Estimated quantitation limit
* – Metcalf & Eddy, Inc., 1996, Soil Data Report for the Granville Solvents Site in Granville, Ohio, for the Granville Solvents Sire PRP Group.



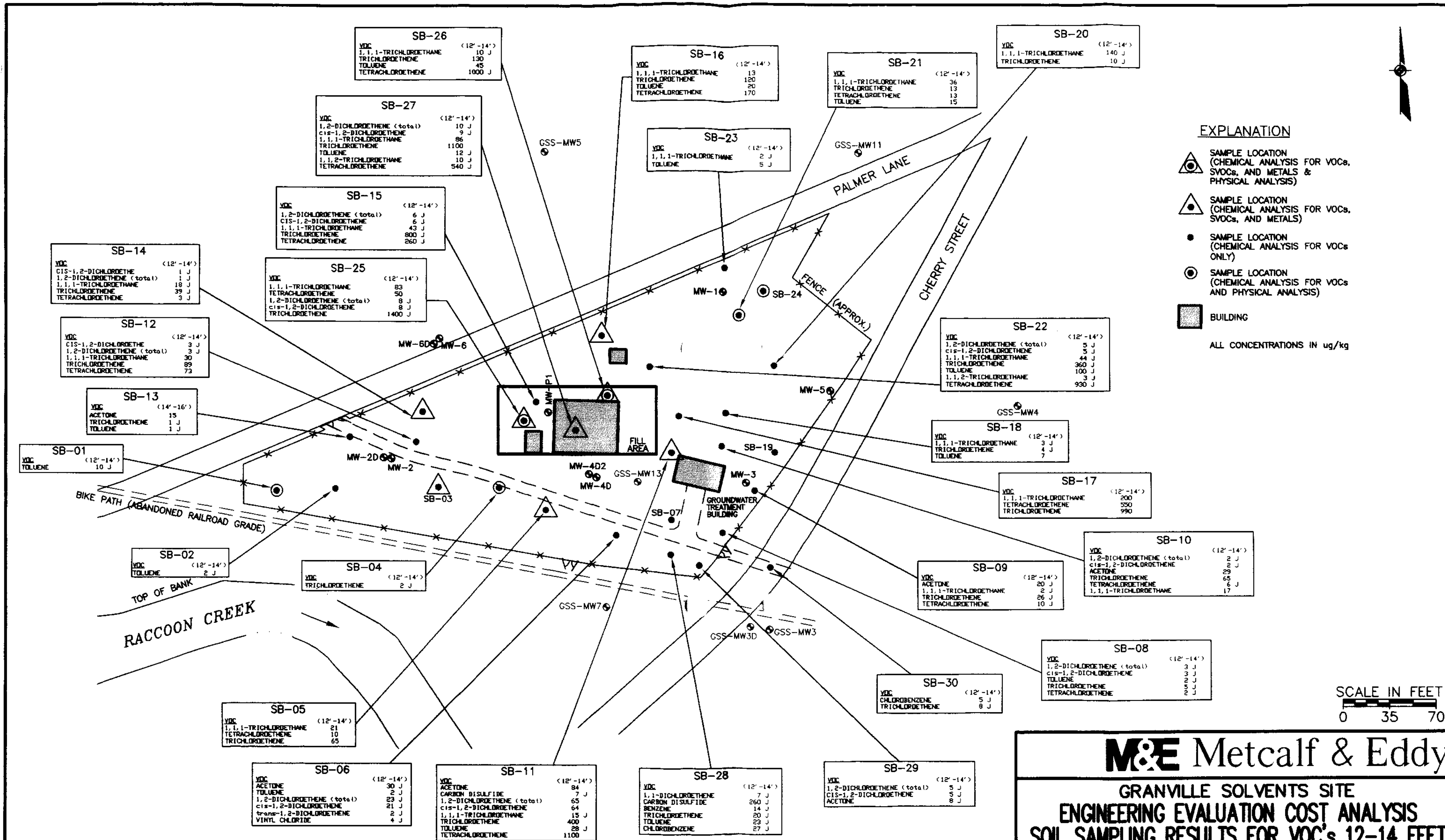
M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
SOIL SAMPLING RESULTS FOR VOC's 2-4 FEET
APRIL, 1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-6	BC	TPF	FEB 97	016688	7



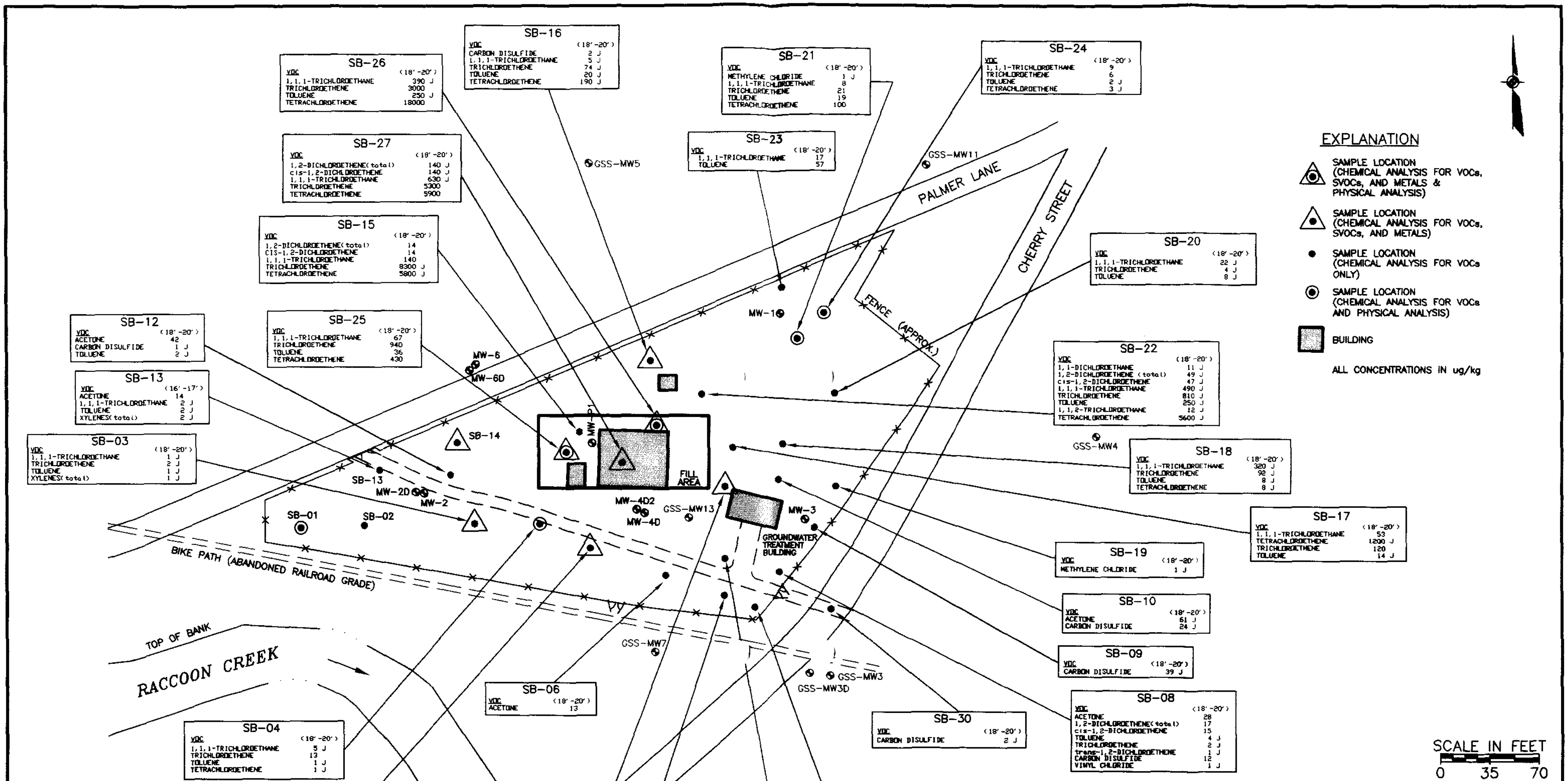
SB-26
VOC (6'-8')
1,1,1-TRICHLOROETHANE 14
TRICHLOROETHENE 200
TOLUENE 210
TETRACHLOROETHENE 920 J
SB-16
VOC (6'-8')
1,1,1-TRICHLOROETHANE 4 J
TRICHLOROETHENE 36 J
TETRACHLOROETHENE 51 J
SB-24
VOC (6'-8')
1,1,1-TRICHLOROETHANE 4 J
SB-27
VOC (6'-8')
1,2-DICHLOROETHENE (total) 210 J
cis-1,2-DICHLOROETHENE 200 J
1,1,1-TRICHLOROETHANE 1700
TRICHLOROETHENE 11000
TOLUENE 340 J
TETRACHLOROETHENE 7000
SB-21
VOC (6'-8')
1,1,1-TRICHLOROETHANE 3 J
SB-15
VOC (6'-8')
ACETONE 26 J
1,2-DICHLOROETHENE (total) 67 J
CIS-1,2-DICHLOROETHENE 65 J
1,1,1-TRICHLOROETHANE 230 J
TRICHLOROETHENE 9300 J
TETRACHLOROETHENE 460 J
XYLENE (TOTAL) 8 J
SB-14
VOC (6'-8')
ACETONE 27 J
SB-12
VOC (6'-8')
TOLUENE 2 J
SB-01
VOC (6'-8')
TOLUENE 6 J
SB-02
VOC (6'-8')
TOLUENE 12
SB-22
VOC (6'-8')
1,2-DICHLOROETHENE (total) 5 J
cis-1,2-DICHLOROETHENE 5 J
1,1,1-TRICHLOROETHANE 190
TRICHLOROETHENE 910
TOLUENE 44
TETRACHLOROETHENE 2000 J
SB-17
VOC (6'-8')
1,1,1-TRICHLOROETHANE 96
TETRACHLOROETHENE 50
TRICHLOROETHENE 330
TOLUENE 2 J
SB-09
VOC (6'-8')
ACETONE 14 J
SB-08
VOC (6'-8')
1,2-DICHLOROETHENE (total) 1 J
cis-1,2-DICHLOROETHENE 1 J
TRICHLOROETHENE 1 J
TETRACHLOROETHENE 1 J
SB-30
VOC (6'-8')
TOLUENE 4 J
TRICHLOROETHENE 4 J
SB-05
VOC (6'-8')
ACETONE 25
SB-04
VOC (6'-8')
ACETONE 15
SB-29
VOC (6'-8')
TRICHLOROETHENE 3 J
TETRACHLOROETHENE 5 J
SB-28
VOC (6'-8')
CARBON DISULFIDE 3 J
CHLOROFORM 2 J
SB-07
VOC (6'-8')
TRICHLOROETHENE 1 J
TETRACHLOROETHENE 1 J
GSS-MW5
GSS-MW11
PALMER LANE
CHERRY STREET
FENCE (APPROX.)
SB-23
MW-1
SB-20
MW-6
MW-6D
MW-5
SB-18
GSS-MW4
SB-25
MW-P1
FILL AREA
SB-11
SB-10
SB-19
SB-13
MW-2D
MW-2
MW-4D2
MW-4D
GSS-MW13
MW-3
GROUNDWATER TREATMENT BUILDING
SB-03
SB-06
BIKE PATH (ABANDONED RAILROAD GRADE)
TOP OF BANK
RACCOON CREEK
GSS-MW7
GSS-MW3D
GSS-MW3
EXPLANATION
SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS & PHYSICAL ANALYSIS)
SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS)
SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs ONLY)
SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs AND PHYSICAL ANALYSIS)
BUILDING
ALL CONCENTRATIONS IN ug/kg
SCALE IN FEET
0 35 70
M&E Metcalf & Eddy
GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
SOIL SAMPLING RESULTS FOR VOC's 6-8 FEET
APRIL, 1996
GRANVILLE, OHIO
FILE NAME EECA-7
CHECKED BC
DRAWN TPF
DATE FEB 97
PROJECT NO. 016688
FIGURE 8



M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
SOIL SAMPLING RESULTS FOR VOC's 12-14 FEET
APRIL, 1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-8	BC	TPF	FEB 97	016688	9



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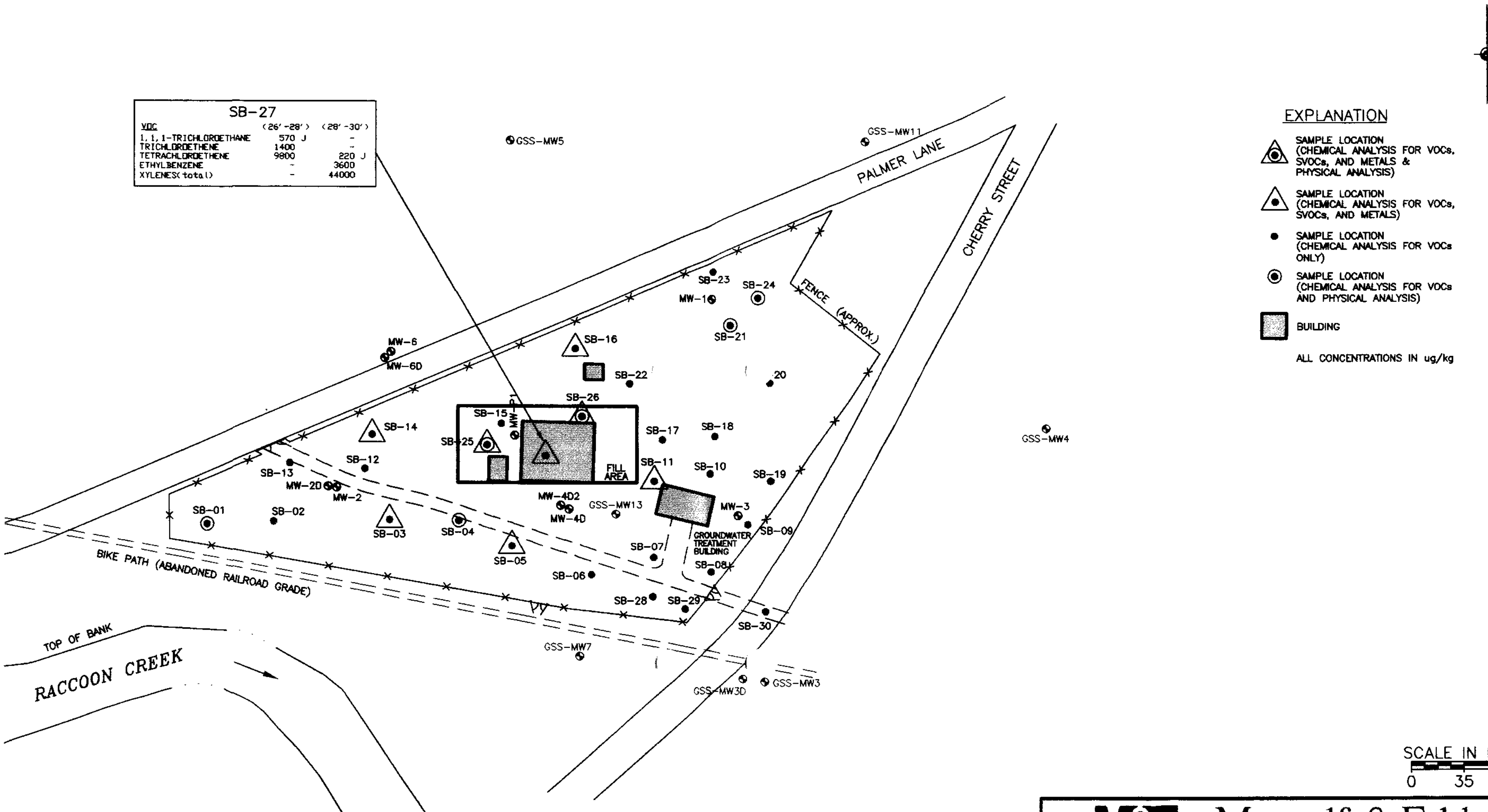
GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
SOIL SAMPLING RESULTS FOR VOC's 18-20 FEET
1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-9	BC	TPF	FEB 97	016688	10



SB-27

VOC	(26'-28')	(28'-30')
1,1,1-TRICHLOROETHANE	570 J	-
TRICHLOROETHENE	1400	-
TETRACHLOROETHENE	9800	220 J
ETHYLBENZENE	-	3600
XYLENES(total)	-	44000

EXPLANATION

- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS & PHYSICAL ANALYSIS)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs ONLY)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs AND PHYSICAL ANALYSIS)
- BUILDING

ALL CONCENTRATIONS IN ug/kg

SCALE IN FEET

0 35 70

Metcalf & Eddy

GRANVILLE SOLVENTS SITE

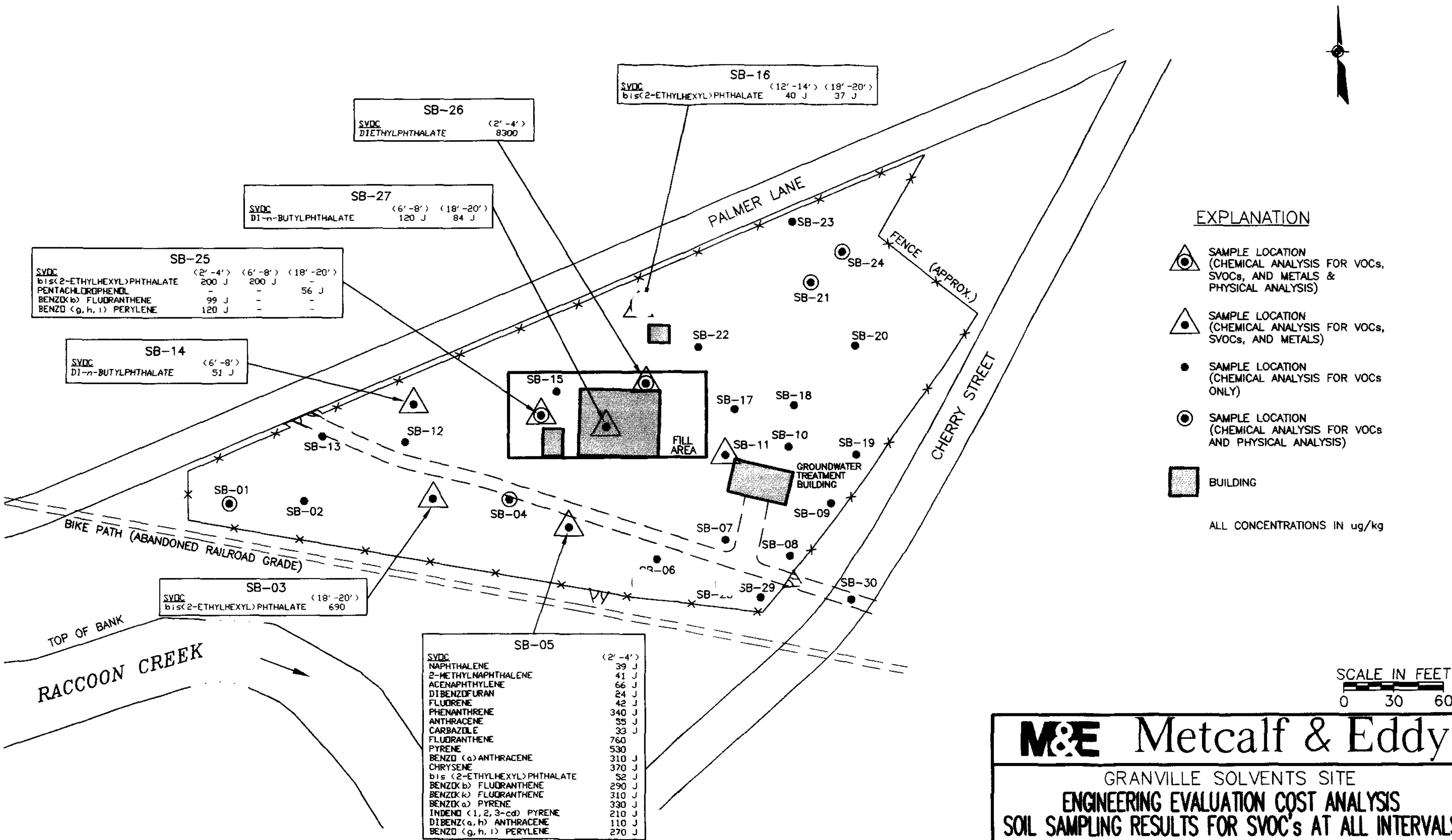
ENGINEERING EVALUATION COST ANALYSIS

SOIL SAMPLING RESULTS FOR VOC's 26-30 FEET

1996

GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-9	BC	TPF	FEB 97	016688	11



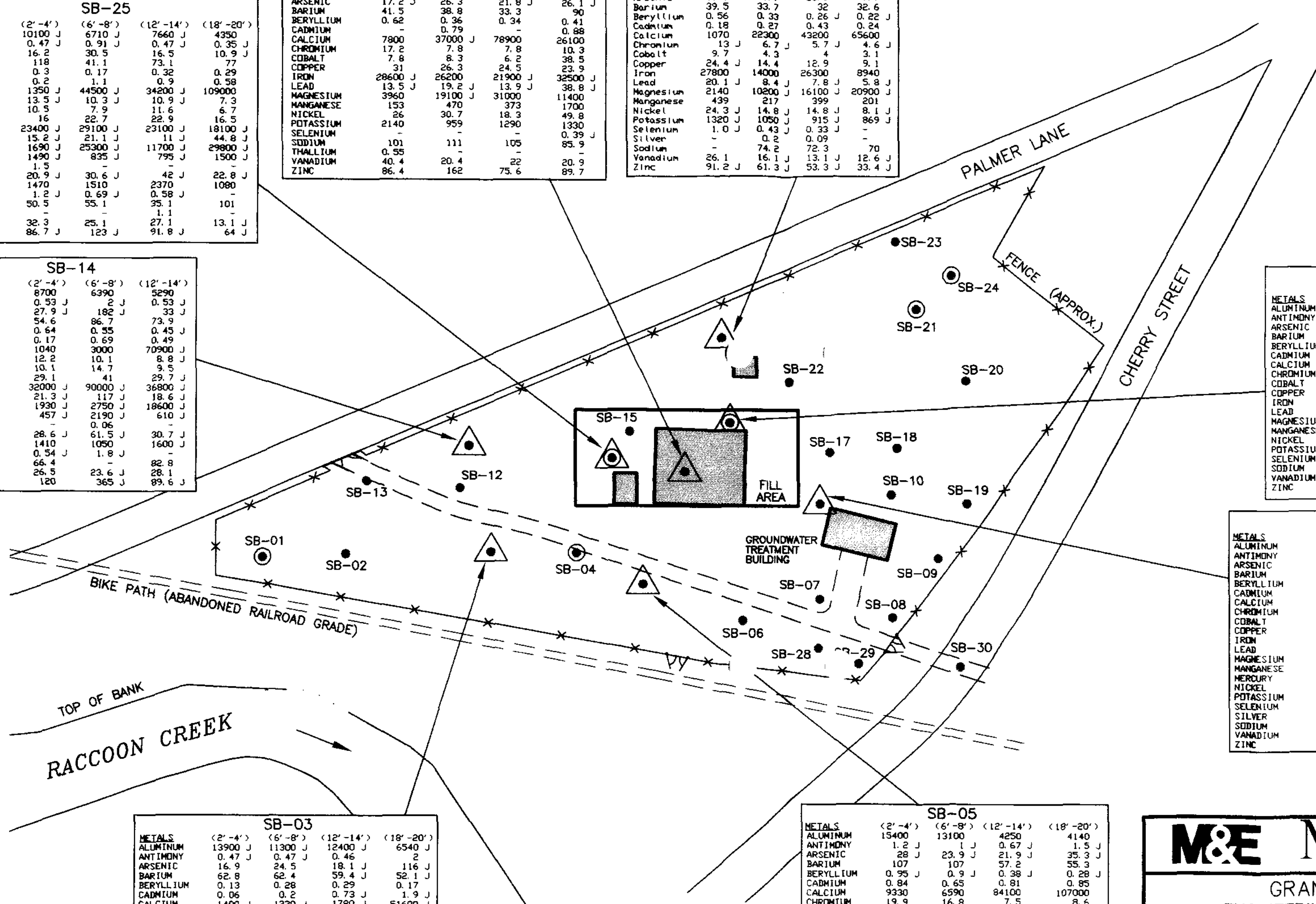
Metcalf & Eddy

GRANVILLE SOLVENTS SITE

ENGINEERING EVALUATION COST ANALYSIS
SOIL SAMPLING RESULTS FOR SVOC's AT ALL INTERVALS
1996

GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-11	BC	TPF	FEB 97	016688	12



EXPLANATION

- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS & PHYSICAL ANALYSIS)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs ONLY)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs AND PHYSICAL ANALYSIS)
- BUILDING

ALL CONCENTRATIONS IN mg/kg.

SCALE IN FEET: 0 30 60

SB-25

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	10100 J	6710 J	7660 J	4350
ANTIMONY	0.47 J	0.91 J	0.47 J	0.35 J
ARSENIC	16.2	30.5	16.5	10.9 J
BARIUM	118	41.1	73.1	77
BERYLLIUM	0.3	0.17	0.32	0.29
CADMIUM	0.2	1.1	0.9	0.58
CALCIUM	1350 J	44500 J	34200 J	109000
CHROMIUM	13.5 J	10.3 J	10.9 J	7.3
COBALT	10.5	7.9	11.6	6.7
COPPER	16	22.7	22.9	16.5
IRON	23400 J	29100 J	23100 J	18100 J
LEAD	15.2 J	21.1 J	11 J	44.8 J
MAGNESIUM	1690 J	25300 J	11700 J	29800 J
MANGANESE	1490 J	835 J	795 J	1500 J
MERCURY	1.5	-	-	-
NICKEL	20.9 J	30.6 J	42 J	22.8 J
POTASSIUM	1470	1510	2370	1080
SELENIUM	1.2 J	0.69 J	0.58 J	-
SODIUM	50.5	55.1	35.1	101
THALLIUM	-	-	1.1	-
VANADIUM	32.3	25.1	27.1	13.1 J
ZINC	86.7 J	123 J	91.8 J	64 J

SB-27

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	12900	5250	4740	5690
ANTIMONY	0.53 J	-	0.39 J	0.58 J
ARSENIC	17.2 J	26.3	21.8 J	26.1 J
BARIUM	41.5	38.8	33.3	90
BERYLLIUM	0.62	0.36	0.34	0.41
CADMIUM	-	0.79	-	0.88
CALCIUM	7800	37000 J	78900	26100
CHROMIUM	17.2	7.8	7.8	10.3
COBALT	7.8	8.3	6.2	38.5
COPPER	31	26.3	24.5	23.9
IRON	28600 J	26200	21900 J	32500 J
LEAD	13.5 J	19.2 J	13.9 J	38.8 J
MAGNESIUM	3960	19100 J	31000	11400
MANGANESE	153	470	373	1700
NICKEL	26	30.7	18.3	49.8
POTASSIUM	2140	959	1290	1330
SELENIUM	-	-	-	0.39 J
SODIUM	101	111	105	85.9
THALLIUM	0.55	-	-	-
VANADIUM	40.4	20.4	22	20.9
ZINC	86.4	162	75.6	89.7

SB-16

	2-4'	6-8'	12-14'	18-20'
Aluminum	9280	4730 J	3140J	2760 J
Antimony	0.33 J	0.29 J	0.48 J	0.23 J
Arsenic	19.9	9.7	20.9	7.7
Barium	39.5	33.7	32	32.6
Beryllium	0.56	0.33	0.26 J	0.22 J
Cadmium	0.18	0.27	0.43	0.24
Calcium	1070	22300	43200	65600
Chromium	13 J	6.7 J	5.7 J	4.6 J
Cobalt	9.7	4.3	4	3.1
Copper	24.4 J	14.4	12.9	9.1
Iron	27800	14000	26300	8940
Lead	20.1 J	8.4 J	7.8 J	5.8 J
Magnesium	2140	10200 J	16100 J	20900 J
Manganese	439	217	399	201
Nickel	24.3 J	14.8 J	14.8 J	8.1 J
Potassium	1320 J	1050 J	915 J	869 J
Selenium	1.0 J	0.43 J	0.33 J	-
Silver	-	0.2	0.09	-
Sodium	-	74.2	72.3	70
Vanadium	26.1	16.1 J	13.1 J	12.6 J
Zinc	91.2 J	61.3 J	53.3 J	33.4 J

SB-14

METALS	(2'-4')	(6'-8')	(12'-14')
ALUMINUM	8700	6390	5290
ANTIMONY	0.53 J	2 J	0.53 J
ARSENIC	27.9 J	182 J	33 J
BARIUM	54.6	86.7	73.9
BERYLLIUM	0.64	0.55	0.45 J
CADMIUM	0.17	0.69	0.49
CALCIUM	1040	3000	70900 J
CHROMIUM	12.2	10.1	8.8 J
COBALT	10.1	14.7	9.5
COPPER	29.1	41	29.7 J
IRON	32000 J	90000 J	36800 J
LEAD	21.3 J	117 J	18.6 J
MAGNESIUM	1930 J	2750 J	18600 J
MANGANESE	457 J	2190 J	610 J
MERCURY	-	0.06	-
NICKEL	28.6 J	61.5 J	30.7 J
POTASSIUM	1410	1050	1600 J
SELENIUM	0.54 J	1.8 J	-
SODIUM	66.4	-	82.8
VANADIUM	26.5	23.6 J	28.1
ZINC	120	365 J	89.6 J

SB-26

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	7980	8430	4300	4410
ANTIMONY	0.56 J	0.14 J	0.41 J	0.55 J
ARSENIC	74.1 J	19.4 J	12.7 J	24.4 J
BARIUM	86.8	76.6	85.8	190
BERYLLIUM	0.6	0.54	0.37	0.3
CADMIUM	0.55	0.63	0.95	0.71
CALCIUM	1890	37500	96100	76300
CHROMIUM	14	11.6	7.2	10.7
COBALT	9.9	9	5.2	6.1
COPPER	27.2	26.3	32.1	18
IRON	54700 J	26600 J	30100 J	27600 J
LEAD	17.1 J	17.4 J	7.7 J	12.1 J
MAGNESIUM	2510	11700	25600	21400
MANGANESE	356	336	829	419
NICKEL	44.4	27.2	27.4	19
POTASSIUM	1650	2230	1110	1540
SELENIUM	1 J	0.41 J	-	-
SODIUM	52.2	86.7	88.9	25.2
VANADIUM	28.3	30.6	20.4	18.7
ZINC	97.2	119	127	70.3

SB-11

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	18700	7850	12600	6720
ANTIMONY	0.73 J	0.27 J	7.3 J	0.35 J
ARSENIC	16.1	13.9	185	34.2
BARIUM	95	40	61.1	86.4
BERYLLIUM	0.74	0.46	0.71	0.39
CADMIUM	-	0.32	1.8	0.38
CALCIUM	2290	659	3400	92500
CHROMIUM	20.8	10.4	20	9.4
COBALT	11.9	6.7	26.2	6.3
COPPER	23	23.2	46.2	16.9
IRON	28500	22300	112000	20600
LEAD	25.6 J	11.5 J	122 J	19.7 J
MAGNESIUM	2860	1490	2410	42500
MANGANESE	696 J	172 J	1800 J	372 J
MERCURY	-	-	0.24	-
NICKEL	22.7	19.5	76	16.7
POTASSIUM	2210	1260	2480	2200
SELENIUM	0.61 J	-	1.2 J	-
SILVER	-	-	0.25	0.3
SODIUM	-	-	93.3	116
VANADIUM	49.3	24	55	24.9
ZINC	76.8	82.5	256	57.5

SB-03

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	13900 J	11300 J	12400 J	6540 J
ANTIMONY	0.47 J	0.47 J	0.46	2
ARSENIC	16.9	24.5	18.1 J	116 J
BARIUM	62.8	62.4	59.4 J	52.1 J
BERYLLIUM	0.13	0.28	0.29	0.17
CADMIUM	0.06	0.2	0.73 J	1.9 J
CALCIUM	1400 J	1330 J	1780 J	51600 J
CHROMIUM	16.8 J	14.8 J	18.2 J	10.2 J
COBALT	9.3	8.1	8.9 J	11.5 J
COPPER	24	25.8	25.1	34.1
IRON	27500 J	26600 J	28400 J	59300 J
LEAD	14.7 J	14 J	16.1 J	64.3 J
MAGNESIUM	2510 J	2100 J	2830 J	23600 J
MANGANESE	482 J	565 J	474 J	489 J
NICKEL	20.3 J	22.7 J	34.1 J	33.3 J
POTASSIUM	1830	1410	2620 J	1810 J
SELENIUM	1.4 J	1.2 J	1.3	2.3
THALLIUM	0.64	0.58	1.2	1.5
VANADIUM	40.1	32.6	50 J	30.5 J
ZINC	77 J	80.8 J	126 J	167 J

SB-05

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	15400	13100	4250	4140
ANTIMONY	1.2 J	1 J	0.67 J	1.5 J
ARSENIC	28 J	23.9 J	21.9 J	35.3 J
BARIUM	107	107	57.2	55.3
BERYLLIUM	0.95 J	0.9 J	0.38 J	0.28 J
CADMIUM	0.84	0.65	0.81	0.85
CALCIUM	9330	6590	84100	107000
CHROMIUM	19.9	16.8	7.5	8.6
COBALT	13.8	12.2	5.8	7.8
COPPER	38.5	33.1	20.5	19.4
IRON	36600 J	31800 J	24300 J	38400 J
LEAD	52.4 J	41.5 J	15.1 J	51 J
MAGNESIUM	6700	4620	30500	25000
MANGANESE	862	858	1260	569
MERCURY	0.1	-	-	-
NICKEL	33.5 J	30.2 J	19 J	25.3 J
SELENIUM	0.83 J	0.62 J	-	2.3 J
SILVER	-	-	-	0.16
SODIUM	148	116	165	70.7
VANADIUM	49.7 J	41.3 J	21.7 J	22.5 J
ZINC	149 J	116 J	109 J	111 J

M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE

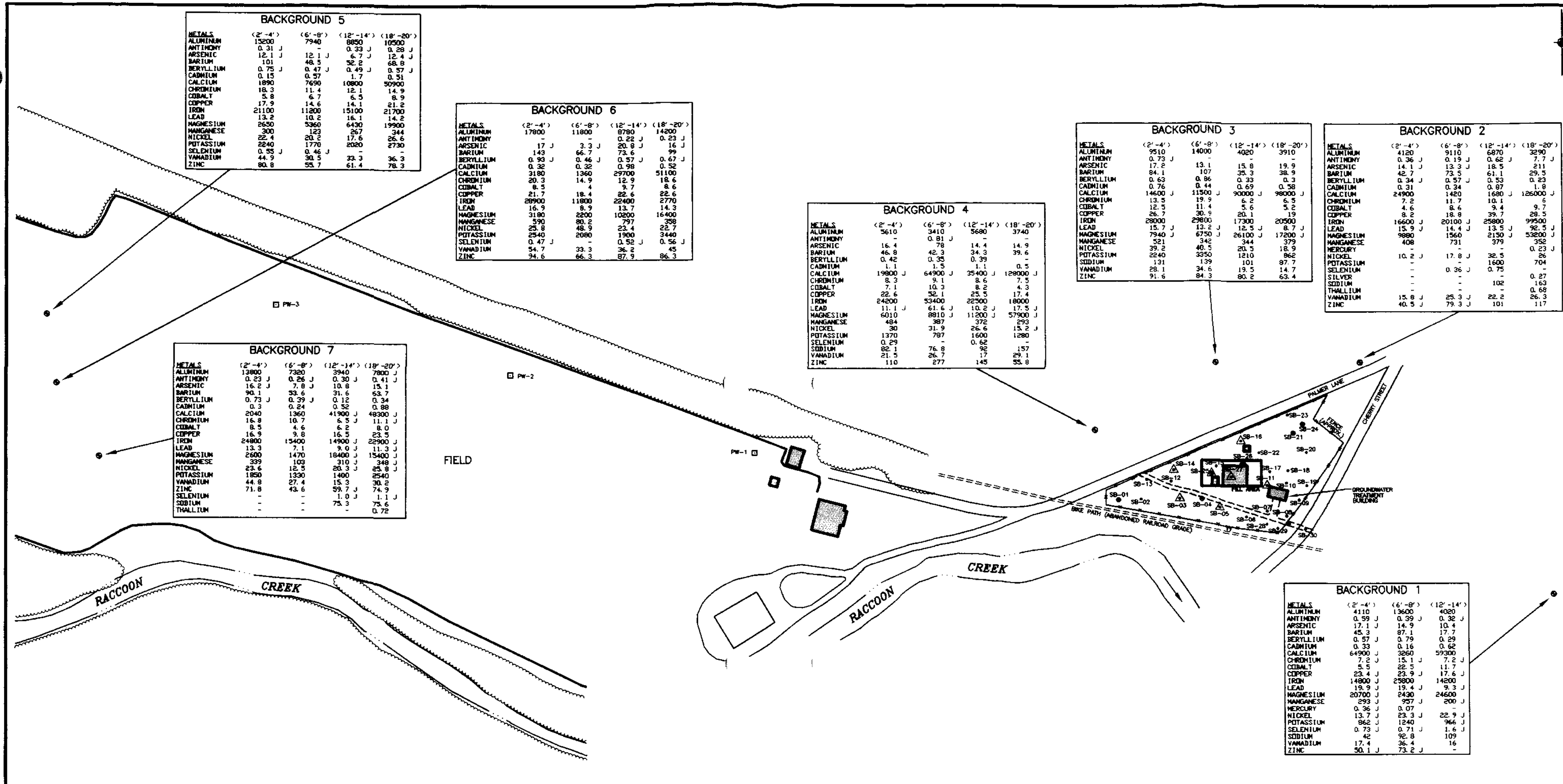
ENGINEERING EVALUATION COST ANALYSIS

SOIL SAMPLING RESULTS FOR METALS AT ALL INTERVALS

1996

GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-12	BC	TPF	FEB 97	016688	13



BACKGROUND 5

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	15200	7940	8850	10500
ANTIMONY	0.31 J	-	0.33 J	0.28 J
ARSENIC	12.1 J	12.1 J	6.7 J	12.4 J
BARIUM	101	48.5	52.2	68.8
BERYLLIUM	0.75 J	0.47 J	0.49 J	0.57 J
CADMIUM	0.15	0.57	1.7	0.51
CALCIUM	1890	7690	10800	50900
CHROMIUM	18.3	11.4	12.1	14.9
COBALT	5.8	6.7	6.5	8.9
COPPER	17.9	14.6	14.1	21.2
IRON	21100	11200	15100	21700
LEAD	13.2	10.2	16.1	14.2
MAGNESIUM	2650	5360	6430	19900
MANGANESE	300	123	267	344
NICKEL	22.4	20.2	17.6	26.6
POTASSIUM	2240	1770	2020	2730
SELENIUM	0.55 J	0.46 J	-	-
VANADIUM	44.9	30.5	33.3	36.3
ZINC	80.8	55.7	61.4	78.3

BACKGROUND 6

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	17800	11800	8780	14200
ANTIMONY	-	-	0.22 J	0.23 J
ARSENIC	17 J	3.3 J	20.8 J	16 J
BARIUM	143	66.7	73.6	99
BERYLLIUM	0.93 J	0.46 J	0.57 J	0.67 J
CADMIUM	0.32	0.32	0.98	0.52
CALCIUM	3180	1360	29700	51100
CHROMIUM	20.3	14.9	12.9	18.6
COBALT	8.5	4	9.7	8.6
COPPER	21.7	18.4	22.6	22.6
IRON	28900	11800	22400	2770
LEAD	16.9	8.9	13.7	14.3
MAGNESIUM	3180	2200	10200	16400
MANGANESE	590	80.2	797	358
NICKEL	25.8	48.9	23.4	22.7
POTASSIUM	2540	2080	1900	3440
SELENIUM	0.47 J	-	0.52 J	0.56 J
VANADIUM	54.7	33.3	36.2	45
ZINC	94.6	66.3	87.9	86.3

BACKGROUND 3

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	9510	14000	4020	3910
ANTIMONY	0.73 J	-	-	-
ARSENIC	17.2	13.1	15.8	19.9
BARIUM	84.1	107	35.3	38.9
BERYLLIUM	0.63	0.86	0.33	0.3
CADMIUM	0.76	0.44	0.69	0.58
CALCIUM	14600 J	11500 J	90000 J	98000 J
CHROMIUM	13.5	19.9	6.2	6.5
COBALT	12.5	11.4	5.6	5.2
COPPER	26.7	30.9	20.1	19
IRON	28000	29800	17300	20500
LEAD	15.7 J	13.2 J	12.5 J	8.7 J
MAGNESIUM	7940 J	6750 J	26100 J	17200 J
MANGANESE	521	342	344	379
NICKEL	39.2	40.5	20.5	18.9
POTASSIUM	2240	3350	1210	862
SODIUM	131	139	101	87.7
VANADIUM	28.1	34.6	19.5	14.7
ZINC	91.6	84.3	80.2	63.4

BACKGROUND 2

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	4120	9110	6870	3290
ANTIMONY	0.36 J	0.19 J	0.62 J	7.7 J
ARSENIC	14.1 J	13.3 J	18.5	211
BARIUM	42.7	73.5	61.1	29.5
BERYLLIUM	0.34 J	0.57 J	0.53	0.23
CADMIUM	0.31	0.34	0.87	1.8
CALCIUM	24900	1420	1680 J	126000 J
CHROMIUM	7.2	11.7	10.1	6
COBALT	4.6	8.6	9.4	9.7
COPPER	8.2	18.8	39.7	28.5
IRON	16600 J	20100 J	25800	99500
LEAD	15.9 J	14.4 J	13.5 J	92.5 J
MAGNESIUM	9880	1560	2150 J	53200 J
MANGANESE	408	731	379	352
MERCURY	-	-	-	0.23 J
NICKEL	10.2 J	17.8 J	32.5	26
POTASSIUM	-	-	1600	704
SELENIUM	-	0.36 J	0.75	-
SILVER	-	-	-	0.27
SODIUM	-	-	102	163
THALLIUM	-	-	-	0.68
VANADIUM	15.8 J	25.3 J	22.2	26.3
ZINC	40.5 J	79.3 J	101	117

BACKGROUND 4

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	5610	3410	5680	3740
ANTIMONY	-	0.81 J	-	-
ARSENIC	16.4	78	14.4	14.9
BARIUM	46.8	42.3	34.3	39.6
BERYLLIUM	0.42	0.35	0.39	-
CADMIUM	1.1	1.5	1.1	0.5
CALCIUM	19800 J	64900 J	35400 J	128000 J
CHROMIUM	8.3	9.1	8.6	7.5
COBALT	7.1	10.3	8.2	4.3
COPPER	22.6	52.1	25.5	17.4
IRON	24200	53400	22500	18000
LEAD	11.1 J	61.6 J	10.2 J	17.5 J
MAGNESIUM	6010	8810 J	11200 J	57900 J
MANGANESE	484	387	372	293
NICKEL	30	31.9	26.6	15.2 J
POTASSIUM	1370	787	1600	1280
SELENIUM	0.29	-	0.62	-
SODIUM	82.1	76.8	92	157
VANADIUM	21.5	26.7	17	29.1
ZINC	110	277	145	55.8

BACKGROUND 7

METALS	(2'-4')	(6'-8')	(12'-14')	(18'-20')
ALUMINUM	13800	7320	3940	7800 J
ANTIMONY	0.23 J	0.26 J	0.30 J	0.41 J
ARSENIC	16.2 J	7.8 J	10.8	15.1
BARIUM	90.1	53.6	31.6	63.7
BERYLLIUM	0.73 J	0.39 J	0.12	0.34
CADMIUM	0.3	0.24	0.52	0.88
CALCIUM	2040	1360	41900 J	48300 J
CHROMIUM	16.8	10.7	6.5 J	11.1 J
COBALT	8.5	4.6	6.2	8.0
COPPER	16.9	9.8	16.5	23.5
IRON	24800	15400	14900 J	22900 J
LEAD	13.3	7.1	9.0 J	11.3 J
MAGNESIUM	2600	1470	18400 J	15400 J
MANGANESE	339	103	310 J	348 J
NICKEL	23.6	12.5	20.3 J	25.8 J
POTASSIUM	1850	1330	1400	2540
VANADIUM	44.8	27.4	15.3	30.2
ZINC	71.8	43.6	59.7 J	74.9
SELENIUM	-	-	1.0 J	1.1 J
SODIUM	-	-	75.3	75.6
THALLIUM	-	-	-	0.72

BACKGROUND 1

METALS	(2'-4')	(6'-8')	(12'-14')
ALUMINUM	4110	13600	4020
ANTIMONY	0.59 J	0.39 J	0.32 J
ARSENIC	17.1 J	14.9	10.4
BARIUM	45.3	87.1	17.7
BERYLLIUM	0.57 J	0.79	0.29
CADMIUM	0.33	0.16	0.62
CALCIUM	64900 J	3260	59300
CHROMIUM	7.2 J	15.1 J	7.2 J
COBALT	5.5	22.5	11.7
COPPER	23.4 J	23.9 J	17.6 J
IRON	14800 J	25800	14200
LEAD	19.9 J	19.4 J	9.3 J
MAGNESIUM	20700 J	2430	24600
MANGANESE	293 J	957 J	200 J
MERCURY	0.36 J	0.07	-
NICKEL	13.7 J	23.3 J	22.9 J
POTASSIUM	862 J	1240	966 J
SELENIUM	0.73 J	0.71 J	1.6 J
SODIUM	42	92.8	109
VANADIUM	17.4	36.4	16
ZINC	50.1 J	73.2 J	-

EXPLANATION

- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS & PHYSICAL ANALYSIS)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs, SVOCs, AND METALS)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs ONLY)
- SAMPLE LOCATION (CHEMICAL ANALYSIS FOR VOCs AND PHYSICAL ANALYSIS)
- BACKGROUND SAMPLE LOCATION (CHEMICAL ANALYSIS FOR METALS ONLY)
- BUILDING
- TREE LINE

ALL CONCENTRATIONS IN mg/kg.

SCALE IN FEET
0 100 200

M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
SOIL SAMPLING RESULTS FOR
BACKGROUND METALS AT ALL INTERVALS
1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-13	BC	TPF	FEB 97	016688	14

Figure 9 shows the areal distribution of chlorinated and nonchlorinated VOCs at a depth of 12 to 14 feet. These concentrations are clustered in/or around the fill area and Site buildings. A wider areal extent of detections is found at this depth than in the overlying samples. Detections extended to the north (SB-16 and SB-22), east (SB-17 and SB-11), and to the south (SB-28 and SB-05) of the fill area. As SB-06 and SB-07, respectively west and north of SB-28, had no detections of these chemicals, this may be an isolated hot spot. SB-11 encountered perched groundwater at a depth of approximately eight feet.

Figure 10 shows the areal distribution of chlorinated and nonchlorinated VOCs at a depth of 18 to 20 feet. This is the largest areal distribution of these chemicals from all of the sampled intervals. Three borings north of the fill area (SB-16, SB-21, and SB-22), three borings east of the fill area (SB-11, SB-17, and SB-18), and two borings south of the fill area (SB-05 and SB-07) had detections of moderate concentrations. Groundwater depths in these borings range from 8 to 23.8 feet below ground surface. All borings within the fill area encountered water between the depths of 22 and 23.8 feet. Samples from borings SB-05, SB-07 and SB-11 at this interval were in the saturated zone.

Figure 11 shows the areal distribution of chlorinated and nonchlorinated VOCs at depth intervals of 26-28 and 28-30 feet. These intervals are located below the water table. SVOCs were detected at seven locations (Figure 12), and detections were clustered in or around the fill area. Metals concentrations are reported on Figure 13 and background metal concentrations are reported on Figure 14.

2.3.2.4 Soil Air Permeability Evaluations

Between May and June 1994, M&E conducted three soil vapor removal (SVR) pilot evaluations at the Site. These evaluations were conducted to obtain information regarding soil permeability for air and VOC removal rates.

M&E installed four SVR wells on the GSS and four SVR wells in the vicinity of the Village of Granville Water Treatment Plant. The wells were installed on a Cartesian Coordinate System with one well installed at the origin, one well installed on the X axis 15 feet from the origin (x=15) and two wells installed on the Y axis 10 and 25 feet from the origin, respectively. All wells were installed to approximately 2 feet above the water table with a maximum depth of 20 feet. SVR wells were constructed of 2-inch Schedule 40 PVC with a 20-slot screen. The wells were completed with approximately 2 feet of stick-up for easy connection to the pilot unit (*Draft Work Plan Removal Action,* December 1994).

The pilot system was connected to the vapor extraction test well (located at the origin) and monitoring equipment was attached to the monitoring wells. After M&E recorded baseline data from the monitoring equipment, the blower was engaged and M&E began recording test data. Vacuum and velocity measurements were recorded approximately every 10 minutes during the test. M&E collected data more frequently during the first hour of the test. Photoionization detector readings were collected and recorded predominantly from the discharge stack and from the monitoring points during the test. Groundwater level data were obtained whenever a monitoring point indicated a rising pressure in the well. The rising pressure may be attributed to upwelling of the aquifer. The tests were conducted for a minimum of 2 hours with a maximum of 6 hours. Discharge of the extracted air to the atmosphere was approved by a letter from Jay McCoy of the Ohio EPA (May 10, 1994).

The results of the pilot evaluations on the Site indicate low air permeability through the surrounding soils. A wide range of vacuum levels were applied to the vacuum extraction well with no response in the monitoring wells surrounding the extraction well. Air velocity readings obtained from the pilot system's induction pipe indicated minimal air flow from the extraction well. The radius of influence surrounding the extraction well was less than 3 feet in diameter.

The results of the pilot evaluation near the Village of Granville Water Treatment Plant indicated that a vacuum response was recorded 15 feet away from the extraction well giving the extraction well a radius of influence of approximately 15 feet. In addition, the extraction well produced approximately 100 cubic feet per minute (cfm) with an applied vacuum of 29 inches of water.

2.3.3 Effect of the Groundwater Barrier, Extraction and Treatment System

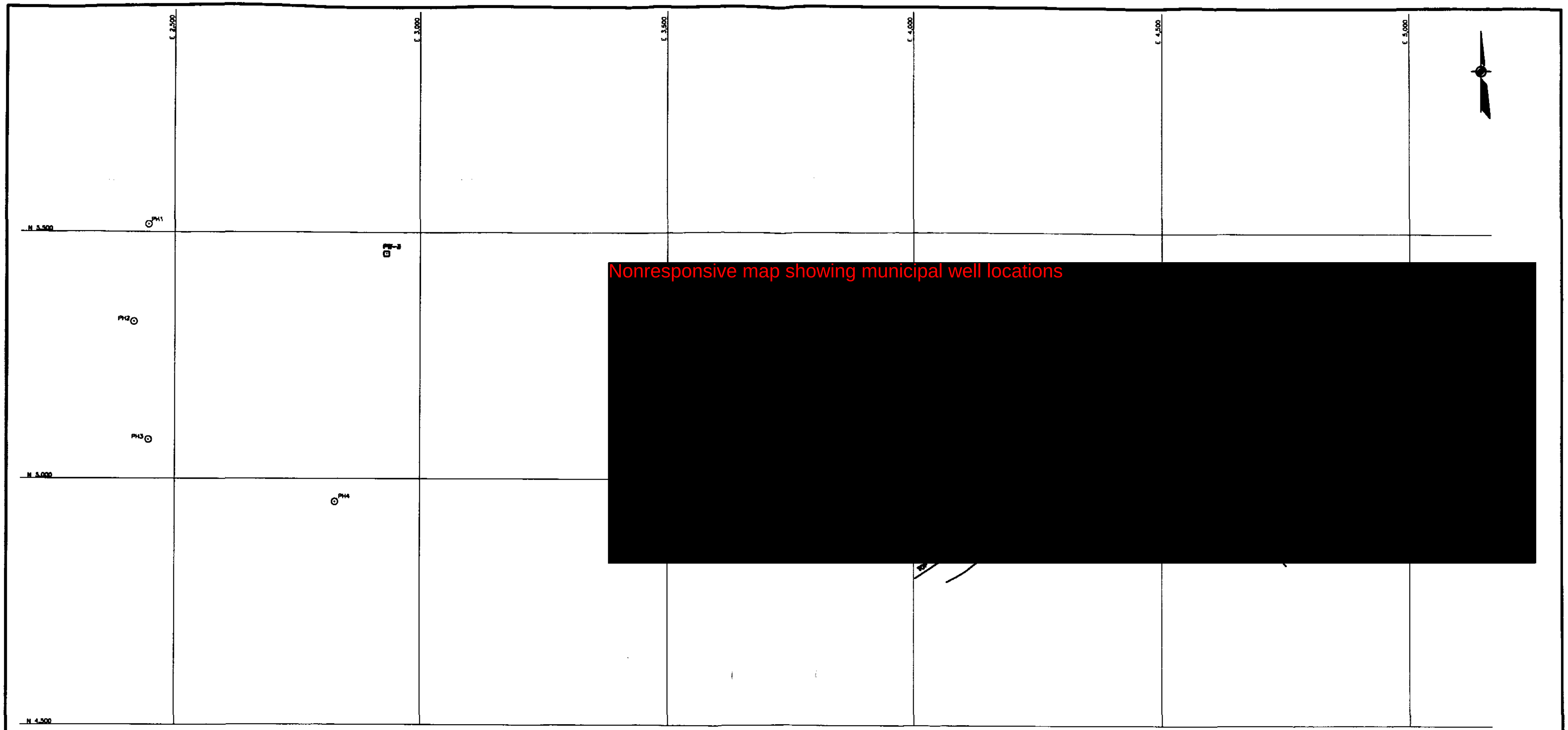
As required by the AOC, two extraction wells were installed between PW-1 and the former warehouse, and a groundwater barrier, extraction and treatment system was activated in 1994. As required by the AOC, PW-1 was replaced by PW-4. The Village of Granville water supply now comes entirely from PW-2, PW-3, and PW-4.

The operation of the extraction wells changed the groundwater flow direction. Potentiometric contour maps made before and after the extraction wells were installed show the changes in the flow system. Groundwater gradients are low and groundwater movement is slow, on the order of a few inches per day in the solvents area, but considerably faster as it neared the wellfield and gradients increased (see *Monitoring Well Installation Report*, December 1996).

The hydraulic connection appears to be poor between the aquifer and Raccoon Creek. This was suggested by pumping tests made after the extraction wells were installed in late 1994 (*Aquifer Pumping Rest Report*, 1995). The short- and long-term tests did not show the presence of recharge boundaries on the time-drawdown graphs that might correspond to leakage from Raccoon Creek. Nor do the potentiometric maps made after the extraction wells were being pumped provide evidence of a strong connection between Raccoon Creek and the aquifer.

Potentiometric surface maps have been developed and are presented below, based on measurements collected from groundwater monitoring wells on January 30, 1995; January 18, 1996; and January 17, 1997 (Figures 15, 16, and 17, respectively). The potentiometric surface map for January 15, 1995 was based on measurements collected from the existing monitoring wells that had been previously installed by the Ohio EPA. The GSS PRP Group installed 15 additional wells during December 1995 and January 1996. As such, the potentiometric surface maps based on subsequent measurements include data from the complete monitoring network. Figures 16 and 17 confirm complete control of the flow system in the vicinity of the two extraction wells, and a groundwater divide in the vicinity of supply well PW-1 that prevents movement of water toward wells PW-2, PW-3 and PW-4.

The two extraction wells, EW-1 and EW-2, are pumped at rates sufficient to establish hydraulic control but not to put an excessive quantity of water through the treatment system (see *Removal Action Aquifer Pumping Report*). Results, so far, show the extraction rates (160 gal/min from EW-1, and 75 gal/min from EW-2) are effective in maintaining the barrier and removing the contaminants. Both wells are highly efficient and could be pumped at much higher rates if needed. The pumping tests showed this aquifer to be extensive and highly transmissive. Although the supply wells require cleaning and iron removal from time to time, water levels in the aquifer recover quickly when the wells are shut down and there is no evidence of over-pumping.



EXPLANATION
MONITOR WELLS
AIR MONITORING STATIONS
EXTRACTION WELLS
VILLAGE PRODUCTION WELLS
OBSERVATION WELL
GSS-MW1 MONITOR WELL NOT YET INSTALLED
PH4 PIEZOMETER NOT YET INSTALLED
* WATER LEVEL NOT USED IN CONTOURING
NOTES:
GSS-EW1 PUMPING AT 200 GPM
GSS-EW2 PUMPING AT 100 GPM
VILLAGE WELL PW-2 PUMPING AT ABOUT 700 GPM

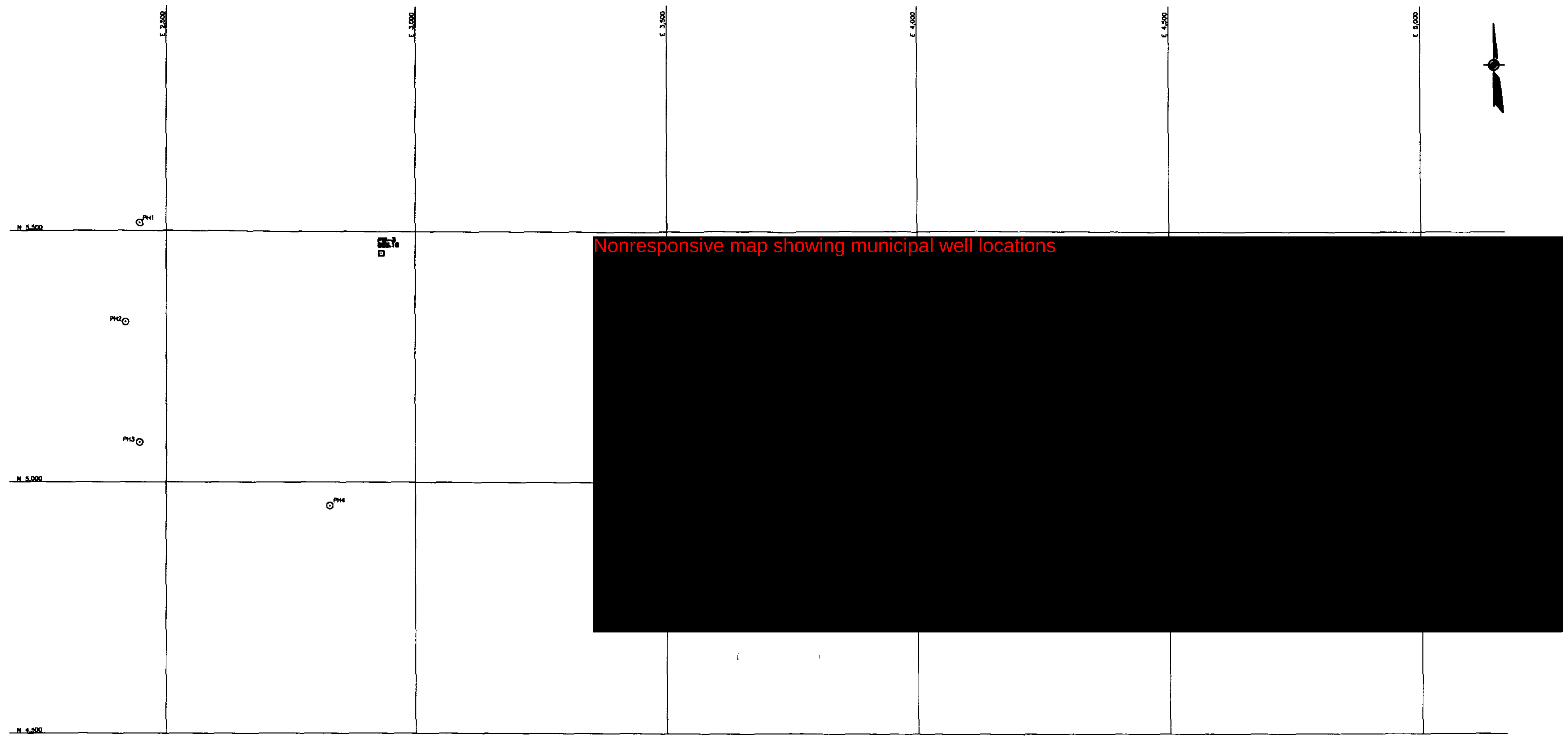
CONTOUR INTERVAL = 0.2 FEET

SCALE IN FEET
0 100 200

M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
POTENTIOMETRIC SURFACE
JANUARY 30, 1995
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-4	BC	TPF	FEB 97	016688	15



EXPLANATION

PH4

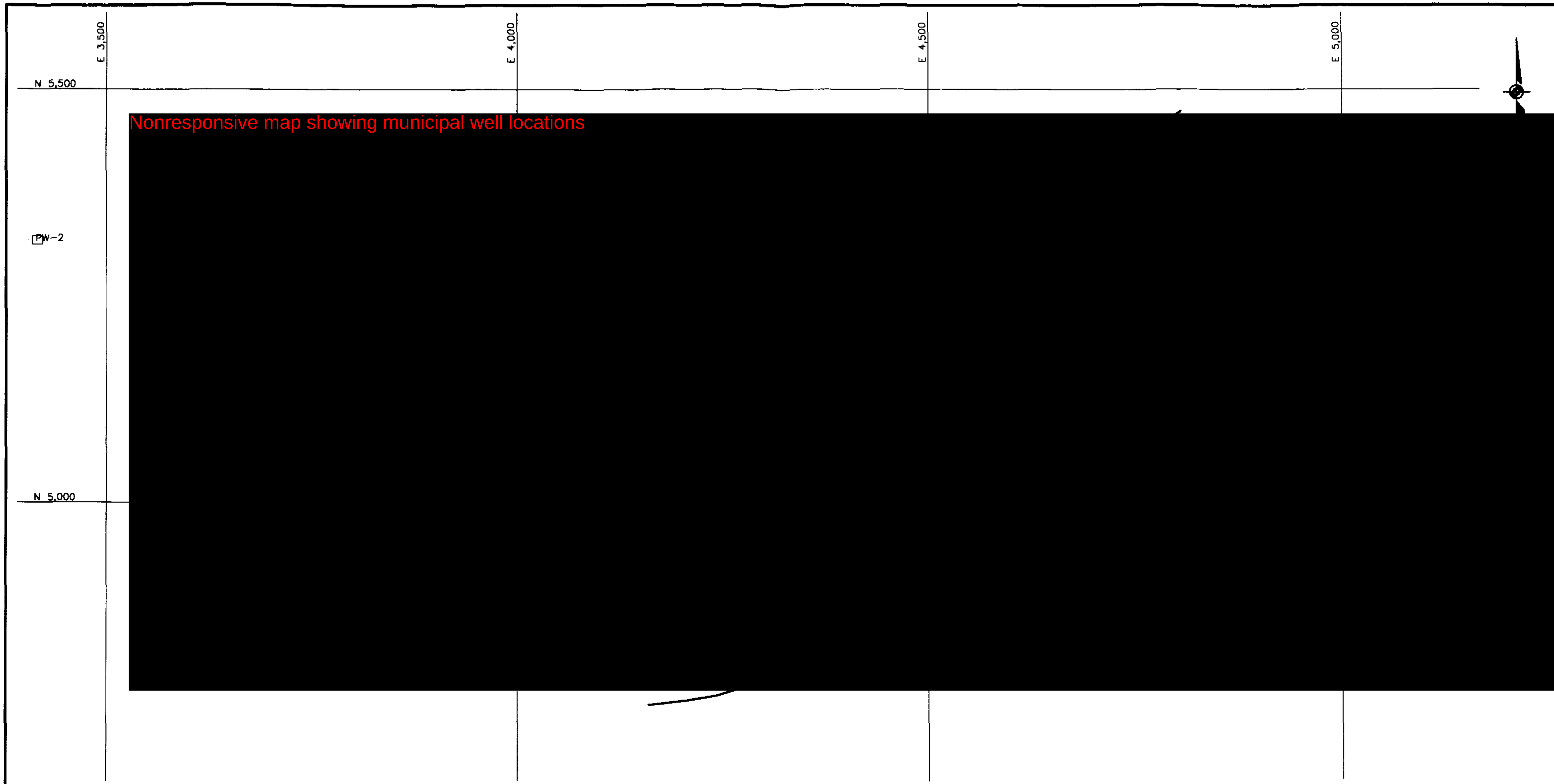
CONTOUR INTERVAL = 0.2 FEET

SCALE IN FEET
0 100 200

M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
ENGINEERING EVALUATION COST ANALYSIS
POTENTIOMETRIC SURFACE
JANUARY 18, 1996
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
EECA-2	BC	TPF	FEB 97	016688	16



EXPLANATION

- MONITOR WELLS
- AIR MONITORING STATIONS
- EXTRACTION WELLS
- VILLAGE PRODUCTION WELLS
- OBSERVATION WELL
- PH4 PIEZOMETER NOT YET INSTALLED

CONTOUR INTERVAL = 0.2 FEET

SCALE IN FEET
0 60 120

M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE
JANUARY 17, 1997
POTENTIOMETRIC SURFACE
GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
POTJAN97	BC	TPF/CAP	APR 97	016688	17

2.4 ANALYTICAL DATA

2.4.1 Groundwater Data

The groundwater data collected during the course of the Removal Action are summarized above. The data collected by the GSS PRP Group are included for reference in Appendix A.

2.4.2 Soil Data

The soil data collected during the course of the Removal Action are summarized above. The data collected by the GSS PRP Group are included for reference in Appendix A.

2.5 STREAMLINED RISK EVALUATION

2.5.1 Introduction to the Risk Evaluation

This streamlined risk evaluation is presented as evidence that when completed, the proposed treatment of source soils on the Site will achieve compliance with the following requirement of the Administrative Order on Consent, which orders the PRP group to:

> *"Treat soils at the site to levels which will assure protection of human health and the environment, to levels which will attain all risk-based standards and federal and state ARARs, and to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels."* (Section V.2.g).

The risk-based standards that are applicable for the Site are determined by U.S. EPA policy as an estimated carcinogenic risk not to exceed the range of 1E-06 to 1E-04 (1 excess case of cancer for every 1 million people exposed to 1 case of cancer for every 10,000 people exposed over a lifetime), and a hazard index of 1.0 or less for exposure to noncarcinogenic chemicals. According to OSWER Directive 9355.0-30, the total risk to an individual from all site-related exposures to carcinogenic chemicals should not be greater than an estimated 1E-04 lifetime risk (U.S. EPA, 1991).

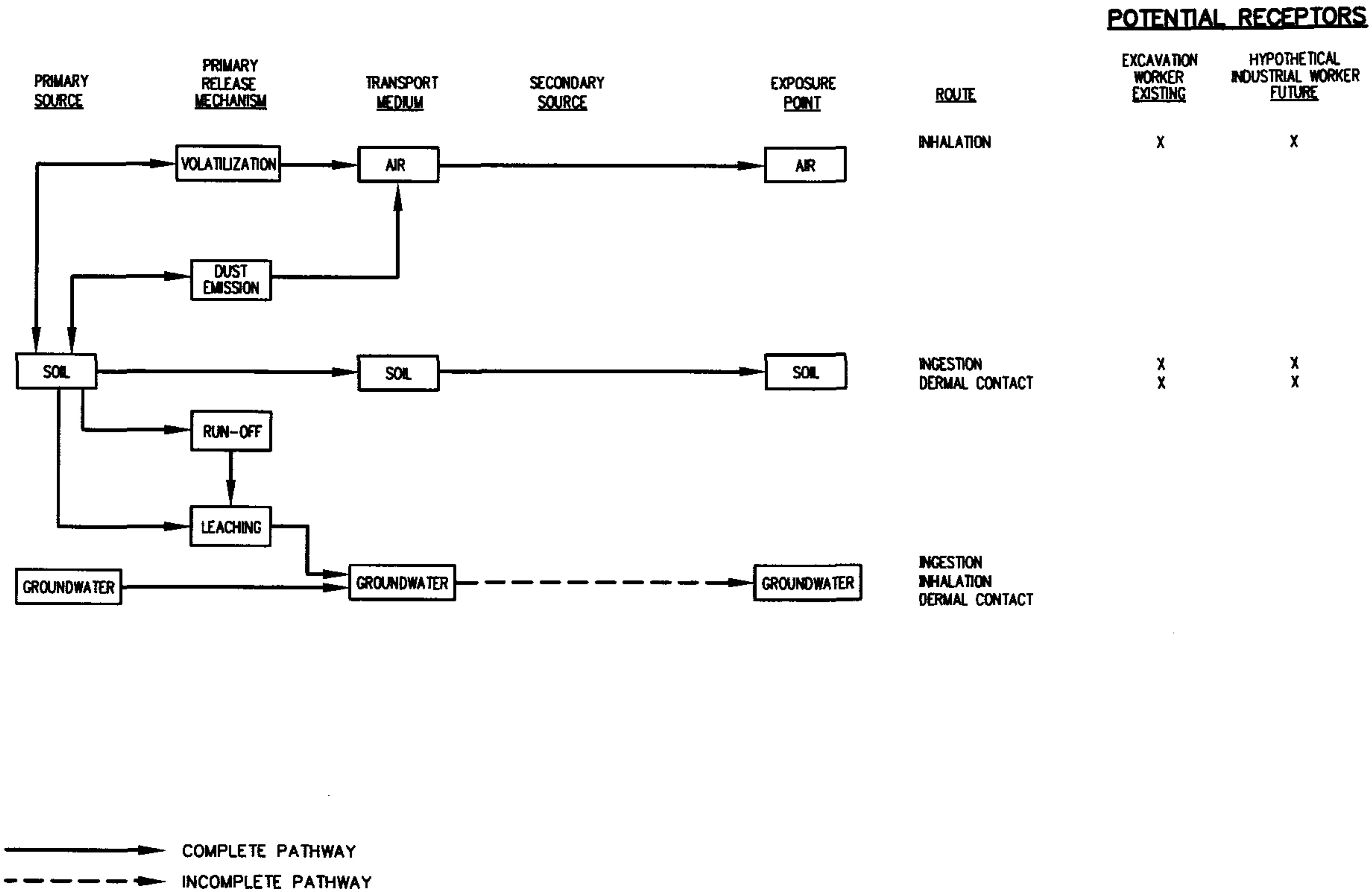
This streamlined risk evaluation was performed to estimate the potential risks associated with the target residual concentrations of the chlorinated and nonchlorinated VOCs in soil that are expected to remain upon completion of the proposed soil treatment. The concentrations of these chemicals which are addressed in this risk evaluation were derived from a model that predicted the concentration of each chemical in soil that would contribute to a concentration of the chemical in underlying groundwater that did not exceed the "no further action" level. The details of the model used to derive the target concentration for individual chlorinated and nonchlorinated VOCs in soil are described in Section 2.5.6 below of this report.

The risk potentially associated with the modeled treatment goals for chlorinated and nonchlorinated VOCs in soil is a function of the toxicity of the chemicals and the degree of contact that people are likely to have with the soil. In turn, the amount of contact that people may have with soil on the Site is a function of land use. The Site is presently zoned for industrial use. This designation is expected to continue into the future, even if the property remains secured and vacant. The chlorinated and nonchlorinated VOCs of concern are primarily located below the ground surface. There are two groups of individuals (receptors) who could come into contact with soil on the site. These groups are: 1) people performing trenching or excavating activities through the subsurface soils, such as may be required to repair or install underground utilities; and 2) people who are employed by some future industrial enterprise and have daily contact with soil on the property.

This risk evaluation examines the two groups of receptors mentioned above and demonstrates that the proposed treatment goals for the chlorinated and nonchlorinated VOCs in soil are expected to be associated with carcinogenic risks and noncarcinogenic hazards which are well within the range of acceptability established by U.S. EPA for an industrial property. The following sections of the risk evaluation present the supporting arguments for this conclusion.

2.5.2 Conceptual Site Model

The conceptual site model (CSM), which is presented in Figure 18, is a representation of the means by which a person may come into contact with the chlorinated and unchlorinated VOCs in soils on the Site. The CSM provides a framework for evaluating potential exposures to the chemicals of concern under the most likely land use conditions.



Metcalf & Eddy

GRANVILLE SOLVENTS SITE
HUMAN HEALTH SITE CONCEPTUAL MODEL
ENGINEERING EVALUATION COST ANALYSIS
GRANVILLE, OHIO

Project Number	
016688	
File Name	Figure
GRN-SCM2	18

2.5.2.1 Land Use Scenarios and Potential Populations of Concern

Granville Solvents, Inc. operated as a petroleum bulk storage, distribution, and recycling facility and later as a solvent recycling and reclamation facility at this location for over 30 years. This long history of industrial use for this property is well established. This property is still owned by GSI. At the present time, a locked twelve-foot high fence with three-strand barbed wire has been placed around the Site and area of impacted soil as ordered by the AOC (*Site Security Plan*, M&E, 1994). The existing conditions of the site are expected to remain as is, enclosed by a locked fence and void of any long-term land use activity (i.e., residential use, commercial use, etc.). The area has limited space available for redevelopment. The presence of the water treatment plant and bridge overpass will most likely prevent any type of development of the site. However, the site is located on land that has been zoned for industrial use, and is bounded on the east and west by industrial property and on the south by a no-build zone adjacent to Raccoon Creek. If the Site is ever used in the future, it is most likely to be for a small commercial or industrial enterprise. The two groups of individuals or receptors who could potentially come into contact with residual concentrations of the volatile chemicals of concern in soil on the property are excavation workers and industrial workers.

Even if the site is not returned to active use, there is the potential that there will be a time when it may be necessary to cross this Site with an underground utility, such as a sewer or electric line. An excavation worker may be required to excavate soil to a given depth and install equipment below grade in soil where residual concentrations of chlorinated and nonchlorinated VOCs are located. There is the potential that this worker will be exposed for a short duration to the chemicals present in the Site soils via incidental ingestion, dermal contact, and inhalation of volatile emissions.

In the unlikely event that the Site is redeveloped as a commercial or industrial enterprise, a hypothetical employee was evaluated as the second type of potential receptor. This scenario makes the very conservative assumption that soils containing residual concentrations of chlorinated and nonchlorinated VOCs will somehow be brought to the surface and distributed across the Site in such a way that an employee could have frequent and repeated contact with the soil. The evaluations for this receptor also assume that the concentrations of chlorinated and nonchlorinated VOCs in the soil will remain constant for 25 years.

2.5.2.2 Exposure Assumptions for the Potential Receptors

For the excavation worker, the on-site work activities are assumed to occur for a single 30 day period, during which time the worker is on-site for eight hours per day. The excavation worker is also assumed to ingest 480 mg/kg of soil every day. In addition, it is assumed that dermal exposure to soil occurs on the head, hands, and arms, so that the skin surface area exposed is 3,200 cm^2. An adherence factor of 1.0 is used in conjunction with a default skin absorption factor of 25 percent for the volatile organic chemicals of concern. Furthermore, it is assumed that the excavation worker would rely on bulldozers or backhoes to move the soil, so that the inhalation rate of 0.83 m^3/hr for moderate activity is appropriate. The excavation worker is intended to represent a short duration, but relatively higher intensity exposure than the industrial worker.

For the industrial worker, the on-site work activities are assumed to occur 250 days per year, during which time the worker is on-site for eight hours per day. The industrial worker is assumed to have a daily ingestion rate of 100 mg/kg. In addition, it is assumed that dermal exposure occurs at the head, hands, and arms, so that the skin surface area exposed is 3,200 cm^2. An adherence factor of 1.0 is used in conjunction with a default skin absorption factor of 25 percent. The inhalation rate of 0.83 m^3/hr for moderate activity is considered appropriate. The industrial worker is intended to represent a less intense, but much longer duration exposure than the excavation worker. The lower ingestion rate of soil and the longer exposure period are the major differences between the two sets of exposure assumptions.

2.5.3 Chemicals of Potential Concern for the Soil Removal Action

Previous investigations identified those chemicals in Tables 2-2 and 2-9. Chemicals of potential concern were identified and reported in the December 8, 1995, DTM (1995). The chemicals of concern were identified based on the general types of chemicals described in the Administrative Order on Consent and the analytical results of historical sampling of groundwater and soil.

There are nineteen (19) chlorinated and nonchlorinated VOCs that are of potential concern in groundwater for which soil treatment goals were derived using the fate and transport model described in Section 2.5.6 below. Table 2-9 lists the chemicals that were originally identified as being of concern in the December 8, 1995, DTM. Chemicals that were detected in at least one soil sample collected during the April 1996 sampling event were included in the fate and transport model for groundwater and are addressed in this risk evaluation.

TABLE 2-9
CHEMICALS OF CONCERN FOR THE GRANVILLE SOLVENTS SITE

1,1,1-Trichloroethane	Carbon disulfide
1,1,2-Trichloroethane	Chlorobenzene
1,1-Dichloroethane	Chloroform
1,1-Dichloroethene	Ethylbenzene
1,2-Dichloroethene (cis)	Methylene chloride
1,2-Dichloroethene (trans)	Tetrachloroethene
2-Butanone	Toluene
Acetone	Trichloroethene
Benzene	Vinyl chloride
Xylenes	

2.5.4 Exposure Concentrations

Risk and hazard potentially associated with the chlorinated and nonchlorinated VOCs in soil were estimated for three sets of exposure concentrations. The first set of estimates is based on the maximum concentration of each chemical that was actually detected in soil and reported in the September 1996 *Soil Data Report*. The estimates based on maximum detected concentrations reflect the potential risks associated with current conditions at the site, and assuming that contact with the soil occurs as previously described in Section 2.5.2.2.

The second set of risk estimates presented in this streamlined evaluation are based on the soil treatment goals generated by the groundwater fate and transport model. The third set of risk estimates are based on the modeled treatment goals with the exception of 1,1-dichloroethene. The concentration of 1,1-dichloroethene initially generated by the fate and transport model was associated with an estimated risk that was greater than the upper bound of the acceptable range set by U.S. EPA policy. Risk associated with inhalation of this compound was the major contributor to the estimate. In order to achieve an estimated risk that was not greater than 1E-04, the treatment goal concentration of 1,1-dichloroethene generated by the model was reduced by a factor of 100. The rationale for this adjustment is discussed in Section 2.5.5.3.

The concentrations of chlorinated and nonchlorinated VOCs in the ambient air that were used to estimate risk and hazard from the inhalation route of exposure were derived using U.S. EPA accepted methods of Baker and MacKay (1985). Estimates of exposure concentrations of volatile compounds in ambient air are modeled from soil concentrations under the assumption that the soil concentrations remain constant over time. For the volatile chemicals of concern at the Site, this is a conservative assumption and does not account for processes such as biodegradation, volatilization and dilution by rainfall that will cause the concentrations in soil to decrease over time. A more detailed explanation of the Baker and MacKay volatile emissions model is included in Appendix B to this report.

The exposure point concentrations used in the risk estimates are presented in Table 2-10.

Ambient air concentrations were also derived from maximum soil concentrations of the chemicals of concern based on the predictive modeling techniques of Baker and MacKay (1985, U.S. EPA, 1989), U.S. EPA Superfund Exposure Assessment Manual (U.S. EPA 1988), and Gifford & Hanna (1970), and Tennekes (1976). Given that the maximum concentrations detected were generally from samples collected below a depth of six feet, these ambient air concentrations are conservative, particularly for the evaluation of an industrial worker. Again, it is noted that estimates of exposure concentrations in ambient air are modeled from soil assuming that concentrations will remain constant over the duration of exposure. As stated previously, this assumption is conservative, given that environmental fate processes such as dilution, attenuation, hydrolysis, volatilization, and biodegradation are expected to cause concentrations to decrease over time.

2.5.5 Risk Characterization

This risk characterization estimates the carcinogenic risks and the noncarcinogenic hazards which may be associated with the doses of chemicals experienced by an excavation worker and a hypothetical future on-site industrial worker. The exposure assumptions for the future employee of an industrial enterprise on the site and for an individual who engages in excavation activities were previously defined in Section 2.5.2.2. Carcinogenic and noncarcinogenic toxicity factors which have been derived for the chemicals of concern are provided in Table 2-11.

TABLE 2-10
SUMMARY OF EXPOSURE CONCENTRATIONS
FOR VOLATILE ORGANIC CHEMICALS OF CONCERN IN SOILS
(Concentrations in mg/kg)

	Maximum Detected Concentration	Modeled Soil Treatment Goal	Revised Soil Treatment Goal
1,1,1-Trichloroethane	1.7	147.81	147.81
1,1,2-Trichloroethane	0.012	4.0	4.0
1,1-Dichloroethane	0.011	59.22	59.22
1,1-Dichloroethene	0.007	2.74	0.0274[a)]
cis-1,2-Dichloroethene	4.6	48.85	48.85
trans-1,2-Dichloroethene	0.021	94.74	94.74
2-Butanone	0.014	360	360
Acetone	0.084	139	139
Benzene	0.014	3.0	3.0
Carbon disulfide	0.7	4.0	4.0
Chlorobenzene	0.027	66	66
Chloroform	0.002	62	62
Ethylbenzene	3.6	320.59	320.59
Methylene chloride	0.002	1.6	1.6
Tetrachloroethene	18	5.53	5.53
Toluene	0.34	725.2	725.2
Trichloroethene	11	6.67	6.67
Vinyl chloride	0.03	0.44	0.44
Xylenes	44	907	907

[a)] Revised based on estimated risk for an industrial worker.

TABLE 2-11 TOXICITY VALUES FOR CHEMICALS OF POTENTIAL CONCERN AT GSS

CHEMICAL	TOXICITY INFORMATION* — NONCARCINOGENIC RfDs: ORAL RfD (mg/kg/day)		ADJUSTED ORAL (DERMAL) RfD (b) (mg/kg/day)		INHALATION RfD (mg/kg/day)		CANCER SLOPE FACTORS: ORAL SLOPE FACTOR (mg/kg/day)-1	ADJUSTED ORAL (DERMAL) SLOPE FACTOR (a) (mg/kg/day)-1	INHALATION SLOPE FACTOR (mg/kg/day)-1	Oral Absorption Factor (c) (UNITLESS)
	SUBCHRONIC	CHRONIC	SUBCHRONIC	CHRONIC	SUBCHRONIC	CHRONIC				
1,1,1-Trichloroethane	9.0E-02	NA	NA	NA	2.9E-01	2.9E-01	NA	NA	NA	1.0E+00
1,1,2-Trichloroethane	4.0E-02	4.0E-03	4.0E-02	4.0E-03	NA	NA	5.7E-02	5.7E-02	5.7E-02	1.0E+00
1,1-Dichloroethane	1.0E+00	1.0E-01	1.0E+00	1.0E-01	1.4E+00	1.4E-01	NA	NA	NA	1.0E+00
1,1-Dichloroethene	9.0E-03	9.0E-03	7.2E-03	7.2E-03	NA	NA	6.0E-01	7.5E-01	1.2E+00	8.0E-01
1,2-Dichloroethene (cis)	1.0E-01	1.0E-02	9.0E-02	9.0E-03	NA	NA	NA	NA	NA	9.0E-01
1,2-Dichloroethene (trans)	2.0E-01	2.0E-02	1.8E-01	1.8E-02	NA	NA	NA	NA	NA	9.0E-01
1,2-Dichloroethene (mixture)	9.0E-03	9.0E-03	8.1E-03	8.1E-03	NA	NA	NA	NA	NA	9.0E-01
2-Butanone	2.0E+00	6.0E-01	1.6E+00	4.8E-01	2.9E-01	2.9E-01	NA	NA	NA	8.0E-01
Acetone	1.0E+00	1.0E-01	1.0E+00	1.0E-01	NA	NA	NA	NA	NA	1.0E+00
Benzene	NA	3.0E-04	NA	2.7E-04	1.7E-02	1.7E-03	2.9E-02	3.2E-02	2.9E-02	9.0E-01
Carbon disulfide	1.0E-01	1.0E-01	8.0E-02	8.0E-02	3.0E-03	2.0E-01	NA	NA	NA	8.0E-01
Chlorobenzene	NA	2.0E-02	NA	1.6E-02	NA	5.0E-03	NA	NA	NA	8.0E-01
Chloroform	1.0E-02	1.0E-02	9.5E-03	9.5E-03	NA	NA	6.1E-03	6.4E-03	8.1E-02	9.5E-01
Ethylbenzene	1.0E-01	1.0E-01	8.0E-02	8.0E-02	2.9E-01	2.9E-01	NA	NA	NA	8.0E-01
Methylene chloride	6.0E-02	6.0E-02	4.8E-02	4.8E-02	8.6E-01	8.6E-01	7.5E-03	9.4E-03	1.6E-03	8.0E-01
Tetrachloroethene	1.0E-01	1.0E-02	1.0E-01	1.0E-02	NA	NA	5.2E-02	5.2E-02	2.0E-03	1.0E+00
Toluene	2.0E+00	2.0E-01	2.0E+00	2.0E-01	NA	1.1E-01	NA	NA	NA	1.0E+00
Trichloroethene	NA	6.0E-03	NA	6.0E-03	NA	NA	1.1E-02	1.1E-02	6.0E-03	1.0E+00
Vinyl chloride	NA	NA	NA	NA	NA	NA	1.9E+00	2.4E+00	3.0E-01	8.0E-01
Xylenes	NA	2.0E+00	NA	1.8E+00	NA	8.6E-02	NA	NA	NA	9.0E-01

NA - Toxicity values (RfD/CSF) not available from IRIS, HEAST, scientific literature, USEPA nor OhioEPA for risk evaluation.
H - Health Effects Assessment Summary Tables (HEAST)
I - Integrated Risk Information Service (IRIS)
N - National Center for Environmental Assessment (NCEA)
Sources: U.S. EPA, Integrated Risk Information System (IRIS) database accessed January 1996.
U.S. EPA Health Effects Assessment Tables (HEAST), Annual FY-1995 edition(Heast, 1995).
Note: Region IV default oral absorption factors were used when necessary and are as follows: VOCs - 0.80, SVOCs - 0.50, inorganics - 0.20.
(a) Adjusted oral toxicity values used for calculation of dermal risks.
Adjustment of an administered to an absorbed dose CSF: (Administered CSF)-1/(Oral Absorption Factor) = Absorbed Dose CSF
(b) Adjusted oral toxicity values used for calculation of dermal hazards.
Adjustment of an administered to an absorbed dose RfD: (Administered RfD) x (Oral Absorption Factor) = Absorbed Dost RfD
(c) Oral absorption factors from chemical-specific Toxicological Profiles, Agency for Toxic Substances and Disease Registry, U.S. Public Health Service.

2.5.5.1 Evaluation of Non-Carcinogenic Hazards

The potential for adverse noncarcinogenic effects from chemical exposure is expressed in terms of the hazard quotient (HQ). The hazard quotient is the ratio of the estimated dose, or exposure, which a human receives to the estimated dose level believed to be safe, the reference dose (RfD).
Once the hazard quotients for each chemical in each of the exposure pathways are determined, they are added together to calculate a total site non-cancer hazard index (HI). If the hazard index value is less than 1.0, it is believed the potential of non-carcinogenic injury is low. If the hazard index exceeds 1.0, potential of non-carcinogenic effects may exist.

The hazard quotients calculated for each of the chemicals of potential concern and excavation exposures considered in this streamlined risk evaluation are provided in Appendix B. These hazard quotients were then added together to calculate the total hazard index for the Site. The results of these calculations are summarized in Tables 2-12 and 2-13.

2.5.5.2 Evaluation of Carcinogenic Risks

The increased incidence of cancer from exposure to a chemical is described in terms of the probability that an individual will develop cancer as a result of that exposure. The probability, or risk value, is calculated by multiplying the average daily intake (DI) by the chemical-specific cancer slope factor (CSF). Because the probability of the incidence of cancer is assumed to occur over a lifetime, even for a single incident of exposure, the exposure is averaged over an average life span of 70 years (25,550 days) for carcinogenic effects.

This risk value is calculated by multiplying the average daily intake (DI) by the carcinogenic slope factor for the chemical:

$$Cancer\ Risk = DI \times CSF \tag{1}$$

Risk estimates are presented as cancer risk per unit of population. For example, a risk estimate of 1E-04 is equivalent to one occurrence of cancer per 10,000 individuals in a given population.

The risk estimates calculated for each of the chemicals of potential concern and exposures considered in this risk evaluation are provided in Appendix A.

TABLE 2-12
SUMMARY OF RISK AND HAZARD ESTIMATES
EXCAVATION WORKER EXPOSURE TO CHEMICALS OF CONCERN IN SOIL

Maximum Detected Concentrations		
Route of Exposure	**Cancer Risk**	**Noncancer Hazard**
Ingestion	9.0E-09	1.6E-04
Dermal	1.5E-08	2.7E-04
Inhalation	1.2E.08	6.3E-04
TOTAL ESTIMATE	**3.6E-08**	**1.1E-03**

Modeled Treatment Goal Concentrations		
Route of Exposure	**Cancer Risk**	**Noncancer Hazard**
Ingestion	2.9E-08	7.5E-03
Dermal	5.6E-08	1.2E-02
Inhalation	4.6E-06	1.4E-02
TOTAL ESTIMATE	**4.7E-06**	**3.4E-02**

Revised Treatment Goal Concentrations		
Route of Exposure	**Cancer Risk**	**Noncancer Hazard**
Ingestion	1.6E-08	7.3E-03
Dermal	2.9E-08	1.2E-02
Inhalation	5.9E-08	1.4E-02
TOTAL ESTIMATE	**1.0E-07**	**3.3E-02**

TABLE 2-13
SUMMARY OF RISK AND HAZARD ESTIMATES
INDUSTRIAL WORKER EXPOSURE TO CHEMICALS OF CONCERN IN SOIL

Maximum Detected Concentrations		
Route of Exposure	**Cancer Risk**	**Noncancer Hazard**
Ingestion	2.0E-07	2.0E-03
Dermal	3.2E-06	3.3E-02
Inhalation	2.4E-06	5.3E-03
TOTAL ESTIMATE	**5.8E-06**	**4.0E-03**

Modeled Treatment Goal Concentrations		
Route of Exposure	**Cancer Risk**	**Noncancer Hazard**
Ingestion	6.2E-07	2.0E-02
Dermal	1.3E-05	3.6E-01
Inhalation	9.5E-04	4.0E-01
TOTAL ESTIMATE	**9.6E-04**	**7.8E-01**

Revised Treatment Goal Concentrations		
Route of Exposure	**Cancer Risk**	**Noncancer Hazard**
Ingestion	3.4E-07	2.0E-02
Dermal	6.1E-06	3.6E-01
Inhalation	1.2E-05	4.0E-01
TOTAL ESTIMATE	**1.8E-05**	**7.8E-01**

2.5.5.3 Results

The estimates of risk and hazard are presented in Tables 2-12 and 2-13 for both the excavation worker and the future industrial employee for each of the three sets of soil concentrations: 1) the maximum detected concentrations, 2) the modeled soil treatment goals, and 3) the revised soil treatment goals.

The estimated carcinogenic risk and non-carcinogenic hazard associated with exposure to the maximum concentrations of the chemicals of concern detected in site soils are within the acceptable ranges set by U.S. EPA and Ohio EPA policy.

The estimated hazard associated with exposure to non-carcinogens was less than 1.0 for both the excavation worker and the industrial employee assuming that these receptors were exposed to the soil treatment goal concentrations generated by the transport to groundwater model. The estimated carcinogenic risk of 4.7E-06 for an individual engaged in short duration excavation of soils containing the soil treatment goal concentrations was within the acceptable range of 1E-06 to 1E-04. However, the estimated carcinogenic risk of 9.6E-04 for an industrial employee exposed to soil containing the soil treatment goal concentrations of the chemicals of concern was higher than the upper bound of the acceptable range. The primary contributor to the estimated risk was the inhalation of 1,1-dichloroethene in air, as predicted by the Baker and MacKay model based on the treatment goal concentration for this compound.

Based on this estimate, the modeled concentration of 1,1-dichloroethene was reduced by a factor of 100 for the third set of risk and hazard calculations. All other exposure point concentrations were held constant at the original treatment goals generated by the groundwater model. The estimates of non-carcinogenic hazard remained essentially the same for both potentially exposed groups of individuals. Using the revised exposure point concentration for 1,1-dichloroethene, the estimated carcinogenic risk for a future industrial employee decreased from 9.6E-04 to 1.8E-05. This is within the acceptable range for commercial and industrial land use. The total estimated cancer risk and noncancer hazard for the two receptors are summarized below for each of the three sets of exposure concentrations.

SUMMARY OF RISK AND HAZARD ESTIMATES

Receptor	Maximum Detected Concentration	Modeled Soil Treatment Goals	Revised Soil Treatment Goals
Excavation Worker			
Risk	3.6E-08	4.7E-06	1.0E-07
Hazard	5.5E-04	3.4E-02	3.3E-02
Industrial Employee			
Risk	9.6E-06	9.6E-04	2.0E-05
Hazard	5.2E-03	2.4E-01	2.4E-01

With the exceptions of tetrachloroethene and trichloroethene, the treatment goal concentrations of chemicals in soil generated by the fate and transport model are greater than the maximum concentrations of those same chemicals detected on the Site. Consequently the estimated risk and hazard potentially associated with the modeled soil concentrations are higher than the estimated risk and hazard potentially associated with present soil conditions on the site. Although the concentration of 1,1-dichloroethene used in the revised treatment goals is 1/100th of the modeled concentration, it is still greater than the maximum concentration detected on the Site.

From a practical standpoint, 1,1-dichloroethene was not shown to be a major contributor to the contamination in groundwater underlying the Site. The maximum concentration of 1,1-dichloroethene detected in soil was 0.007 mg/kg, compared to a modeled treatment goal of 2.74 mg/kg. The revised treatment goal of 0.0274 mg/kg for 1,1-dichloroethene is still higher than the maximum detected concentration of this compound. The modeled treatment goal for 1,1-dichloroethene was reduced by a factor of 100 exclusively to accommodate the need to generate a set of treatment goals that would fall within the range of acceptable carcinogenic risks for industrial use of the property.

Based on the results of the fate and transport model, the maximum detected concentrations of chlorinated and nonchlorinated VOCs with the exceptions of tetrachloroethene and trichloroethene presently in soil on the site are less than the concentrations that would be predicted to produce concentrations of the same chemicals in the underlying groundwater equal to or less than appropriate standards (MCL or risk based MCLs). The maximum detected concentrations of the two exceptions, tetrachloroethene and trichloroethene, were similar to the modeled concentrations and produced estimated risks within the same order of magnitude.

The maximum detected concentrations of all chemicals of concern (except the chlorinated solvents PCE and TCE) are lower than the modeled concentrations. The only soil treatment required to achieve the goal is for the chlorinated solvents PCE and TCE.

2.5.6 Results of the Fate and Transport Modeling

The results of the risk evaluation for direct contact with soil demonstrate that concentrations of chemicals of concern remaining in soil meet the first objective of the AOC which requires that soil levels assure protection of human health. The second objective of the AOC requires that no groundwater beneath the soils become contaminated above the groundwater no further action levels. Therefore, the streamlined risk evaluation shifts from the protection of human health focus to protection of the environment by centering on the fate and transport of chemicals which can potentially migrate from soil to groundwater.

A *Groundwater Flow and Contaminant Fate and Transport Model Report* (hereafter referred to as the *Model Report*) was submitted to the U.S. EPA on December 20, 1996, and was revised and resubmitted in July 1998. This report is summarized below.

The primary objective of the modeling presented in the referenced report was to provide a means to evaluate the transport of chemicals from soil to groundwater for comparing treatment alternatives. An important factor in the comparisons involved the interaction between the low permeability surface soils and the aquifer. The soils at the Site contain chlorinated organic compounds and other compounds that are slowly contributing dissolved phase chemicals to the aquifer. Given the need to model the interaction between the soils and the aquifer, a numerical model was chosen. This type of interaction can be effectively handled with a numerical model, but is beyond the capabilities of analytical models.

MODFLOW was chosen as the numerical flow model for this project. MODFLOW is a standard numerical groundwater flow model commonly in use today. It has been thoroughly tested and widely accepted by industry, consultants, and the regulatory community. Visual MODFLOW, a graphical interface for MODFLOW, MODPATH, and MT3D, was used for importing data to the model and graphically portraying the results.

MODPATH was used to establish flowpaths within the model and to establish times of advective travel along the flowlines. A program known as MT3D[96] was used for contaminant fate and transport modeling.

This newly updated fate and transport code incorporates the features of the older versions of MT3D with new options and algorithms to facilitate more complex simulations.

MODEL DESCRIPTION

The procedures used to implement the models and the specific parameters chosen are described in detail in the *Groundwater Flow and Contaminant Fate and Transport Model Report* (M&E, April 1998), and are briefly described here. In general, where insufficient data regarding the regional aquifer were present, assumptions were made which tended to increase the probability that the model would predict impact at the Village of Granville wellfield. As such, the model maintains a conservative bias toward wellfield impact.

The model grid was established over an area of approximately 2 square miles surrounding the Site. The size of the individual grid cells varied within the model based on the needed resolution in specific areas. In the areas located a substantial distance away from the pumping wells, the grid cells were a maximum of 250 feet. In the areas in the vicinity of the pumping wells, the size of the grid cells were reduced to 50 feet.

The model was divided vertically into 10 layers. The upper five layers represent the clay-rich soil overlying the aquifer. These layers were assigned identical input parameters due to the relative homogeneity of the soils based on the results of the soil sampling program at the Site (*Soil Data Report*, 1996). The reason for dividing the clay soil into separate layers was to provide a higher level of resolution for soil contaminant concentrations within the soil column. The lower five layers of the model represent the sand and gravel of the buried valley aquifer.

Two types of aquifer boundary conditions were used in modeling the aquifer system. No-flow boundaries were used at the bedrock walls of the buried valley system. The bedrock is composed of the Raccoon Shale, which is of very low permeability compared to the highly permeable sand and gravel of the buried valley aquifer. For this reason, it was appropriate to designate the bedrock walls as no-flow boundaries in the model.

The location of the bedrock walls was based on area topography, a bedrock surface map, oil and gas exploration borings, and the experience of M&E staff geologists with this buried valley system. The floor of the main bedrock valley was also modeled as a no-flow boundary. Depth to the bedrock floor in the modeled area was established based on the bedrock map, available oil and gas exploration boring logs, and borings completed as a part of the investigations at the Site and at the Village of Granville wellfield. The bedrock surface was entered into the model as the bottom of model layer 10.

Constant head flow boundaries were arbitrarily established transverse to the main buried valley above and below the modeled area. This allowed flow into and out of the area through the aquifer. No information was available regarding the downvalley regional gradient in the buried valley beyond the pumping influence of the Village of Granville wellfield. The direction of flow of Raccoon Creek is from west to east, and it can be presumed that the regional gradient would also be to the east. However, in keeping with the decision to provide assumptions that increase the probability of the model predicting impact to the wellfield, constant head flow boundaries at the same elevation were chosen for the east and west boundaries of the valley. Under background (non-pumping) conditions, these levels would have resulted in no gradient either up or down the valley. Any background gradient in this system would probably be from west to east and tend to lessen the influence of the Village of Granville wells on the groundwater flow at the Site. The constant head flow boundaries are far enough from the pumping centers to have only minimal influence on model results.

Raccoon Creek flows through the central portion of the valley in most of the modeled area. The creek turns northward near the Site and flows eastward in a course that lies just south of the Site. This represents the closest approach of the creek to the Site and to the northern boundary of the buried valley system within the modeled area.

Raccoon Creek was not included in the model. The choice not to include the creek was based on information obtained from pumping tests which indicated that the creek does not interact significantly with the aquifer under pumping conditions (*Aquifer Pumping Test Report*, 1995). If interaction were present between the creek and the aquifer, the creek would be a losing stream through the modeled area based on relative water levels. Water added to the aquifer from the stream would tend to diminish the effects of the Village of Granville wells on the aquifer beneath the Site. Thus, excluding the creek from consideration in the model increased the probability of the model predicting impact to the wellfield from the GSS.

No-flow boundaries were used on all horizontal edges of layers comprising the clay-rich upper soils. Given the low permeability of these soils, the choice of boundary conditions in a regional model is insignificant. Constant head cells were also used vertically as the top layer of the clay soils to provide a stable means of introducing recharge to the system. The use of a constant head boundary to represent recharge is discussed in detail in the model report.

Wells for the Village of Granville were placed in the model at their appropriate locations within the modeled area and screened at the appropriate depths within the aquifer. The pumping rates for the wells for calibration runs were based on the rates reported for the 98 hour pumping test (*Aquifer Pumping Test Report*, 1995). For model prediction runs, the overall pumping rate of the wellfield was distributed between the three supply wells according to their respective productive capacities (i.e., well PW-3 accounted for less production than wells PW-2 and PW-4). In practice, the wells are alternated and each well is pumped at a rate significantly exceeding Village of Granville demands. Pumping is therefore intermittent throughout the course of a given day. For the model, however, each well was assumed to pump at a constant rate, and the total pumping rate for the combined wells was matched to their average pumping rate. In keeping with the desire to remain conservative in the model set-up, the total pumping rate was assumed to be twice the current pumping rate for model predictions. The duration of the model runs was typically 30 years into the future. It was assumed that production of the wellfield would remain within a factor of two of the current average pumping rate throughout this 30 year period.

Stable recharge could not be implemented through the use of the MODFLOW recharge package because of the low permeability of the upper clay soil. However, the upper clay soil is known to be saturated from a few feet below the surface to the interface with the aquifer, based on soil moisture values obtained from Shelby tube samples collected during the soil investigation (*Soil Data Report*, 1996). Given this condition, a consistent gradient will be present through the clay soils to the aquifer interface. This condition was approximated using constant head boundaries at the surface which represent the "water table" within the clay soil. Recharge is largely independent of rainfall conditions. Rainfall in excess of the very low infiltration rate of the soils simply runs off the surface. The clay soil slowly transmits water between a constant head source at the level of saturation and a variable head sink at the interface with the aquifer.

Groundwater flow through the clay soils to the aquifer carries contaminants from the soils to the aquifer. Therefore, the proper representation of flow in the clay soils is essential for making valid predictions regarding how the soils interact with groundwater and bring new contaminants to the groundwater system. The subject of flow through the clay soils is addressed thoroughly in the sensitivity analysis of the model and in model runs comparing the remedial alternatives.

The transmissivity of the aquifer was established from pumping tests at the Site using observation wells within the Site and portions of the Village of Granville wellfield. The transmissivity values were represented in the model in terms of hydraulic conductivity values for each model layer within the aquifer. Based on boring logs at the Site and the Village of Granville wellfield, the lower portion is the most permeable part of the aquifer. Therefore, for the initial model set-up, the hydraulic conductivity of the lower two model layers was set higher than the conductivity of the upper three aquifer layers. The conductivities were chosen such that the combined transmissivity of the model layers matched the results of the pumping tests.

The hydraulic conductivity of the overlying clay soil layers was based on laboratory permeability tests of Shelby tube samples collected in the most recent soil sampling program. Twelve laboratory permeability tests were conducted. The hydraulic conductivity determined by these tests ranged from 1×10^{-8} to 9×10^{-8} cm/sec. However, it is not uncommon for laboratory permeability tests to underestimate the conductivity of a clay soil, and it is likely that the true permeability of these soils is somewhat higher than that shown by the tests. Thus, for the initial model the conductivity of the clay soil layers was set at 1×10^{-7} cm/sec.

High vertical hydraulic conductivity allows a large amount of contaminants releasing to the groundwater system over a short time period. Low vertical hydraulic conductivity brings a small amount of contaminants over a relatively longer time frame. For each compound, there are critical values resulting in "worst case" treatment alternatives. Those critical values of vertical hydraulic conductivity were determined through a series of systematic trials and selected as final model parameters to provide the "worst case" comparison. The critical values for all compounds ranged from 5×10^{-6} to 3×10^{-8} cm/sec.

For the lower five model layers representing the aquifer, the initial storativity and specific yield values were estimated from the pumping test analyses. A 30 percent porosity was assumed, consistent with textbook values typically given for this type of aquifer.

For the clay layers, estimated values of porosity, storativity, and specific yield were used. The porosity of clay rich soils was estimated to be 35 percent. The storativity was assumed to be 0.001 and the specific yield to be 0.01 percent. No reliable field method exists for determining storativity in low permeability soils. The specific yield used may appear relatively small in comparison to typical specific yield values for permeable soils. However, little water drains from low permeability clay-rich soils. Water enters these surficial soils in response to rainfall, and is removed largely by evapotranspiration during the growing season. The transition between full saturation and field capacity represents the loss of only a very small amount of water in these soils, which is reflected by the low specific yield used in the model.

Several contaminant compounds have been identified in field investigations at the Site. These compounds are listed in Table 2-14. Distribution of these contaminants in the aquifer and the overlying soils has been investigated and reported in the *Soil Data Report* (1996), and summarized earlier in this report.

The initial concentrations of the chemicals of concern assigned to the aquifer layers of the model were based on the concentrations analyzed at the Site in the Hydropunch® study (*Work Plan for the Removal Action*, 1995). This study was completed in 1994 and does not represent current concentrations after operation of the pump and treat remediation system for nearly three years. The GSS monitoring wells have shown a decline in contaminant concentrations since pumping was started. However, the most complete analysis of the distribution of contaminant in the aquifer was from the Hydropunch® study, and to increase the probability of the model predicting wellfield impact, these values were used in the model.

The measured concentration of solvents in the saturated clay soil (from the *Soil Data Report*, 1996) is a total concentration in soil, which includes concentration of solvent adsorpted on the clay soil and pore water concentration. The pore water concentration for each solvent was calculated based on individual sorption constant, soil bulk density, and porosity, and assigned to the clay soil layers of the model.

The boring program at the Site involved a close spacing of boring locations, and specialized techniques were used to detect DNAPLs. DNAPLs have not been positively identified or confirmed at any location at the Granville Solvents site using approved U.S. EPA methods. An anomaly exists between the field screening and laboratory results. The experimental field screening results are not consistent with the results obtained from the U.S. EPA-approved analytical methods used to analyze these soils. In most cases where the screening results indicate the presence of DNAPLs, the approved analytical methods

TABLE 2-14
CHEMICALS OF CONCERN AND GROUNDWATER STANDARDS

Chemical of Concern[1]	Maximum Concentration Detected in Soil[2] (mg/kg)	Groundwater MCL (mg/l)	Groundwater Risk-Based MCL (calculated) (mg/l)
1,1,1-Trichloroethane	1.7	0.200	
1,1,2-Trichloroethane	0.012	0.005	
1,1-Dichloroethane	0.011	[3]	0.810
1,1-Dichloroethene	0.007	0.007	
cis-1,2-Dichloroethene	4.6	0.07	
trans-1,2-Dichloroethene	0.021	0.100	
2-Butanone	0.014	[3]	1.9
Acetone	0.084	[3]	0.61
Benzene	0.014	0.005	
Carbon disulfide	0.7	[3]	0.021
Chlorobenzene	0.027	[3]	39
Chloroform	0.002	[3]	0.1
Ethylbenzene	3.6	0.7	
Methylene chloride	0.002	0.005	
Tetrachloroethene	18	0.005	
Toluene	0.34	1	
Trichloroethene	11	0.005	
Vinyl chloride	0.03	0.002	
Xylenes (total)	44	10	

1) Chemicals of concern were identified in the *EE/CA*, May 1996.
2) Reported in the *Soil Data Report*, September 1996.
3) MCLs have not been developed for these compounds. MCLs were calculated using standard EPA methods

demonstrate an absence of contaminants or low concentrations of contaminants. Therefore, potential effects of DNAPL were not incorporated into the model.

However, it is rarely possible to conclude with certainty that DNAPLs are not present in a soil subject to free phase releases. While the potential presence of DNAPL was not directly analyzed by the model, it was considered qualitatively with respect to the scenarios presented below.

The adsorption capacity of the clay-rich soil for the chemicals of concern was not considered in this model. The highest value of a sorption constant in the range of 0.059 - 0.001 ft^3/kg for all compounds actually creates the worst impact on groundwater system for those alternatives in which pumping will be operated and maintained in the early time steps of the model. In keeping with the desire to remain conservative in the model design, the adsorption capacity of soil was not limited.

The sorption constant used for the sand and gravel aquifer was 0.00268 ft^3/kg. This sorption constant was calculated using an assumed bulk density of 56.5 kg/ft^3 and an assumed carbon content of 0.05 percent. The difference between the sorption constant for the aquifer and the clay-rich soils is due to the lower organic carbon content of the aquifer soils. The assumed organic carbon content of the aquifer (0.05 percent) is typical for this type of aquifer. The effect of varying this assumed value was addressed in the sensitivity analysis. Bulk density varies within a relatively narrow range for these soils and its variability has little effect on model outcome.

TCE does not degrade abiotically to any great extent. Some abiotic degradation has been cited in the literature, but these values have been called into question by more recent studies. It is now generally accepted that the abiotic degradation of TCE is slow enough to be neglected.

Biological degradation of TCE has been frequently reported. Such degradation occurs in conjunction with biological degradation of other hydrocarbons or under anaerobic conditions. Evidence of biological degradation is present at the Site. Cis-1,2-dichloroethene (cis-1,2-DCE) is present in the aquifer near EW-1. Small concentrations of this compound were present during the initial studies and the concentrations have increased over time. Cis-1,2-DCE is most commonly produced biologically from degradation of more highly chlorinated compounds.

Although clear evidence of biological degradation is available, at this time there is no way to reasonably quantify the degradation rate. A small degradation constant could have been justified for the model given the site evidence. However, the assumption of no degradation was entered into the model to increase the probability of the model predicting impact to the Village of Granville wellfield.

Reliable values of dispersion are rarely available for input to a fate and transport model. Occasionally the values can be backed out of fate and transport calibration procedures when a great deal is known about the nature, timing, and duration of a chemical release. For the Site, this level of detail about releases was not available. An assumed value of 10 feet was used for longitudinal dispersivity. The transverse dispersivity was assumed to be ten percent of the longitudinal dispersivity and the vertical dispersivity was assumed to be one percent of the longitudinal dispersivity for the aquifer and ten percent for the upper clay soils. These values all represent assumptions which are reasonable for the conditions at the Site and are in line with common practice. The effect of varying the dispersivity was evaluated in the model sensitivity analysis.

Site-specific values for molecular diffusion were not available. This is nearly always true in site investigations, and this parameter is not generally considered to be significant. A literature value of 9.3×10^{-5} ft^2/day (1×10^{-7} cm^2/sec) was used for all model layers. The effects of varying this value were addressed in the model sensitivity analysis.

MODELED ALTERNATIVES

The model was developed as a means to predict the impact of soils on the groundwater beneath the Site and to aid in the evaluation of options for the treatment of impacted soils. The model was used to evaluate three general alternatives: no action, maintenance pumping, soil treatment to calculated cleanup goals.

No Action

This alternative is presented only for comparison. The alternative involves an end to pumping from extraction wells at the Site and the movement of contaminated groundwater toward the Village of Granville wellfield. The calibrated model, with the upper clay soil vertical conductivity set at 0.028 ft/day and TCE as soil contaminant was used for the initial simulation. The initial concentrations of the chemicals of concern used for the aquifer in the calibrated model were based on sampling data from the

1995 Hydropunch® study for the aquifer. Given that the pump and treat system has removed some of the TCE mass in three years of operation, the plume generation indicated for this scenario is probably overestimated. Actually, this simulation more closely approximates conditions where no treatment system had been installed at the Site.

The results of this simulation indicated the arrival of groundwater with TCE concentrations above 5 μg/L at Village of Granville wellfield (PW-2) within 6 years. The TCE impact (above 5 μg/L) spreads to well PW-3 and continues through the 30 year period of the simulation. Well PW-4 was not impacted in this simulation, because wells PW-2 and PW-3 intercepted the plume. Realistically, if wells PW-2 and PW-3 were to become impacted, those wells would be sequentially shut down and well PW-4 would become impacted.

MAINTENANCE PUMPING

The calibrated model was used to evaluate the alternative in which extraction well EW-2 is pumped at 320 gpm for 5 years and then pumped at a maintenance level of 40 gpm for an additional 15 years. Flux from the clay soils to the pumping well was allowed over the entire model run. This alternative was evaluated at each of three vertical hydraulic conductivity values for the upper clay soils. The values were varied by two orders of magnitude from 1 x 10^{-5} cm/sec to 1 x 10^{-7} cm/sec. These conductivity values cover reasonable level of uncertainty for the upper soil hydraulic conductivity.

The simulation using a vertical hydraulic conductivity in the upper soils of 1 x 10^{-5} cm/sec resulted in no regeneration of the 5 μg/L plume after pumping ceased in 20 years. Only a small mass of TCE remained in the upper clay soils after 30 years. The maximum TCE concentration in the pore water of the clay soil was 60 μg/L after 20 years and declined to 18 μg/L after 30 years.

The simulation using a vertical hydraulic conductivity for the upper clay soils of 1 x 10^{-6} cm/sec resulted in slight plume regeneration after 20 years of pumping. The maximum horizontal extent of the 5 μg/L plume was 125 feet from the edge of the impacted clay soil and remained within the bounds of the Site. The maximum depth of the 5 μg/L plume was 885 feet amsl or about 15 feet below the top of the aquifer. After 20 years, the maximum TCE concentration in the upper clay soil pore water was 200 μg/L. After 30 years the maximum concentration had declined to 160 μg/L.

SOIL TREATMENT

This alternative involved soil treatment in addition to the pumping of EW-2 at 320 gpm for 5 years with no further maintenance pumping beyond 5 years. The impacts of 19 contaminants in soil at various concentrations on groundwater system were evaluated using the calibrated model discussed above. As a result of the evaluations, a soil treatment criterion for each individual chemical of concern was developed and the portion of the site requiring treatment was established.

The treatment criteria for individual chemicals of concern was developed through evaluating the simulated results from systematic transport-model runs. With a series of trials at various initial concentrations in the overlying clay soil, individual contaminant plumes in groundwater system were simulated for 25 years after the groundwater pumping stopped. The impact of each contaminant in soil on the groundwater system was then evaluated and its treatment goal in soil was determined based on significance of the impact.

The significance of contaminant impact was evaluated by observing the modeled plume development in the aquifer west of the GSS (in the direction of the Village of Granville Wellfield). The existing interceptor well EW-1 is located in a direct line between the GSS property and the Village of Granville Wellfield. A groundwater contaminant plume directed from the GSS toward the Village of Granville Wellfield would have to pass EW-1. Capture of such a plume by EW-1 has been demonstrated through the current pump and treat effort at the GSS. Given that EW-1 will remain in place and connected to the treatment system located at the GSS, groundwater impact between the GSS and EW-1 is of no consequence with respect to contamination of the Village of Granville Wellfield. At any point in time at which a groundwater contaminant plume in excess of drinking water standards may reach the distance of EW-1, the plume could be captured, contained, and remediated by pumping at EW-1. Therefore, the compliance zone in this aquifer was set at EW-1 and the areas around EW-1 that is within its capture zone.

From the modeling perspective, this required the placement of observation points (or wells) at the distance of EW-1 from the GSS and within the capture zone of EW-1. These observation points were used for each model run to establish when and where the maximum groundwater concentrations passed the compliance zone. For any model run, if the concentration of a given contaminant exceeded the MCL at the compliance zone, impact to the aquifer was considered to have occurred.

Specifically, individual soil treatment standards were derived using the following approach:

1) Determine which chemicals of concern that, using the existing soil concentrations, will generate a groundwater contaminant plume that will exceed the MCL for the given chemical of concern at the compliance zone. Chemicals of concern that exceeded the MCL at the compliance zone were considered to have impacted the aquifer. Model simulations were conducted for each of the 19 chemicals of concern using the existing upper clay soil concentrations established in the GSS soils investigation, and resultant model predictions of plume development were evaluated.

2) Develop treatment goals for those chemicals of concern that did significantly impact the aquifer. The treatment goals defined the concentration of the chemical which could remain in the upper clay soils and not result in the formation of a groundwater contaminant plume that exceeds the MCL at the compliance zone. The treatment goals were developed through simulating the plumes of each contaminant at a series of reduced initial concentrations in the upper soil.

3) Develop a treatment area where the measured concentrations for each contaminant was greater than the established treatment goals.

4) Develop a treatment goal for those compounds that were found to not impact the aquifer at the existing concentrations in the upper clay soils. The treatment goals for these compounds was established by systematically increasing the concentration of a given contaminant of concern in the heavily impacted portion of the upper clay soils until the model indicated an impact to the aquifer (the MCL was exceeded at the compliance zone).

Following the procedure described above, the fate and transport of 19 contaminants listed in 3.3.2 was simulated for a 25-year period after the 5-year pumping of well EW-1 at 320 gpm without maintenance pumping or soil treatment. To establish a "worst case" contaminant plume for each of the 19 compounds modeled, the vertical hydraulic conductivity of the upper clay soils was varied over a broad range (3 orders of magnitude). For all chemicals of concern, the plume generation in the aquifer increased with increasing vertical hydraulic conductivity to a maximum point and then declined with further increases in hydraulic conductivity. Thus, a "worst case" plume could easily be identified for each modeled compound.

The actual hydraulic conductivity that induced a "worst case" plume differed over a range of greater than two orders of magnitude among the 19 chemicals of concern. Therefore, while some parameters generated their worst case" plume at higher vertical hydraulic conductivities others exhibited a "worst case" plume at conductivities a full 2 orders of magnitude lower. As stated previously, the actual value for hydraulic conductivity of the upper clay soils is difficult to pinpoint. However, it can be stated with certainty that the conductivity of the layer is not simultaneously high and low (for a silty clay soil). Thus, the method of always choosing the "worst case" vertical hydraulic conductivity for each chemical of concern can be seen to be highly conservative in favor of protecting the Village of Granville Wellfield. This procedure exaggerates the effects of most chemicals of concern, and in no case did it under-predict the effects.

All the simulation results are summarized in Table 4 of the *Model Report* (M&E, 1998). Of the 19 chemicals of concern, only two chlorinated solvents, TCE and PCE, developed plumes in the aquifer with concentrations at or higher than their MCLs (5 μg/L). For the rest of chemicals of concern, no plume greater than or equal to MCLs or risk-based MCLs was generated in the aquifer.

Treatment standards for PCE and TCE were developed as defined in Step 2 above. Simulations with a series of reduced initial concentrations in the upper clay unit were conducted using the same model scenario (the 5-year pumping of EW-2 at 320 gpm). The "worst case" value of vertical hydraulic conductivity (5×10^{-6} cm/sec) was assigned in the model for both TCE and PCE.

The highest existing concentrations of TCE and PCE in the upper soil pore water were between 5000 and 6000 μg/L. A series of reduced soil pore water concentrations were evaluated in the model at maximum allowed concentrations of 5000, 4000, 3000, 2000, and 1000 μg/L, respectively. The new assignment of initial concentration in the existing gridded input file was conducted by examining the initial concentration of every cell at each upper clay soil layer (layers 2-5). If the existing concentration in any cell was higher than the given maximum allowed concentration, the TCE or PCE concentration in that cell was assigned the maximum allowed concentration. The new initial concentration file was imported into the model layer by layer.

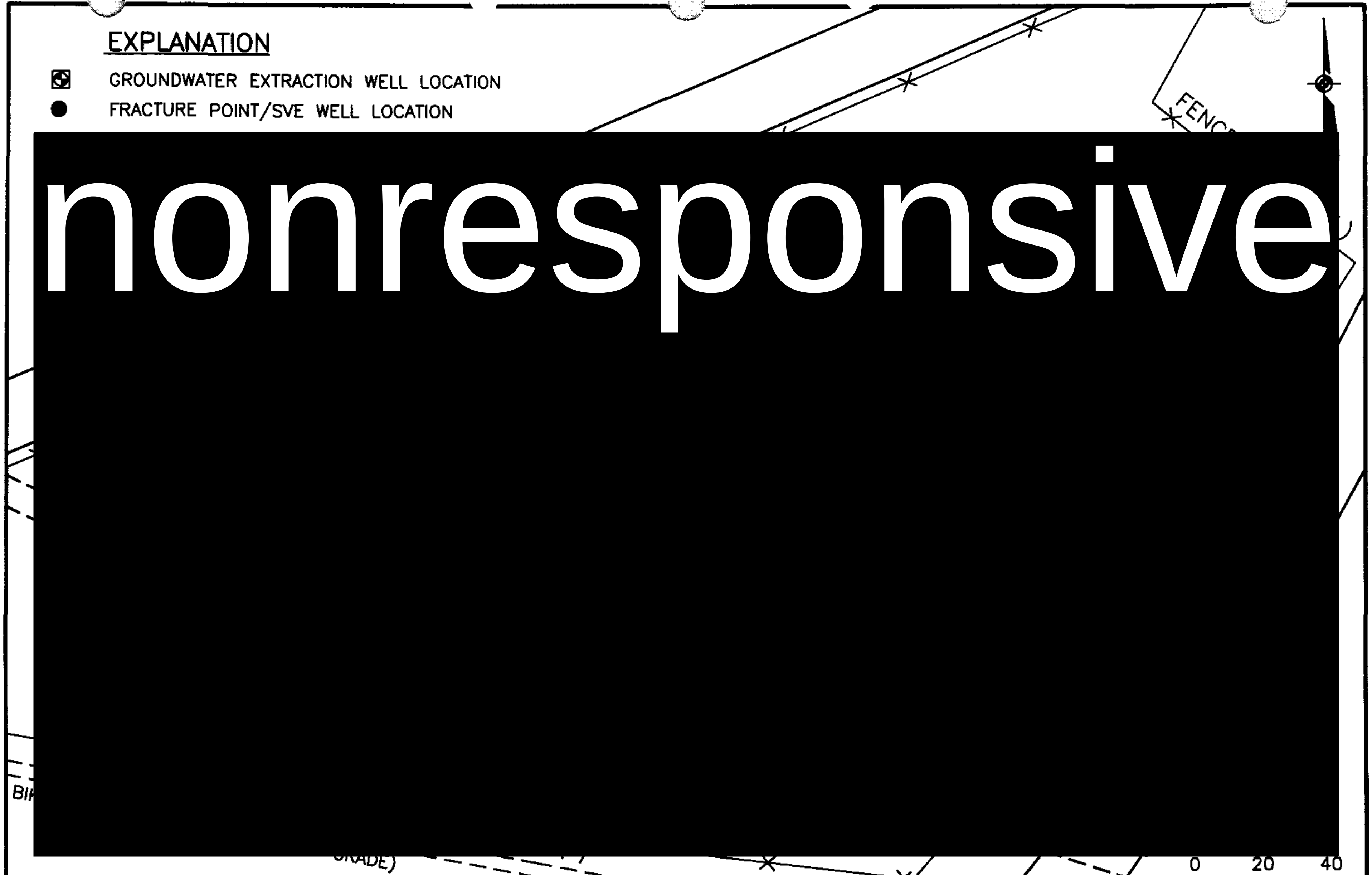
Table 5 of the *Model Report* (May, 1998) summarized both the simulation results for TCE and PCE and provides the highest concentrations present at the compliance zone as defined by breakthrough curves. For PCE, the simulations with initial concentrations of 5000 and 4000 μg/L resulted in 5 μg/L plumes beyond the compliance zone. The highest concentrations in the breakthrough curves also exceeded the MCL at the compliance zone for these maximum allowable concentrations. However, the model with a maximum allowable concentration of 3000 μg/L predicted no exceedance of the 5 μg/L MCL at the compliance zone. At the level of 3000 μg/L, the simulated plume had a maximum extent of 508 feet at 12 years, diminished gradually after 12 years, and disappearing by 28 years. The maximum concentration at the compliance zone was less than the 5 μg/L MCL. Therefore, the level of 3000 μg/L was selected as a treatment standard for PCE. Similar model simulations were conducted for TCE (Figure 16). All the simulation results indicated that the level of 5000 μg/L is acceptable as a treatment standard for TCE.

The treatment standard stated in terms of pore water concentration of TCE and PCE in the upper clay unit can be converted back to total soil concentration (as measured by the laboratory for soil samples) based on Equation 1 of the *Model Report*. Corresponding to the pore water concentrations at 5000 and 3000 μg/L, the treatment standards for soil concentrations are 6670 μg/kg (TCE) and 5530 μg/kg (PCE).

Soil with TCE and PCE concentrations greater than 6670 μg/L and 5530 μg/L, respectively, have the potential to impact the groundwater system at the compliance zone. That is not to say that this soil concentration will impact the Village of Granville Wellfield, only that the model, with a large conservative bias, predicts an exceedance of the MCLs for these compounds at a distance from the GSS where capture, containment, and remediation by EW-1 is still possible.

The portion of the site requiring treatment area was established where TCE or PCE soil concentrations are greater than the maximum allowable concentrations provided in Figure 19. The areas of the site where soil concentrations, at some level in the upper clay soil column, exceeded the above maximum contaminant level is illustrated in Figure 20.

Step 4 of the above procedure defines the methods used to establish treatment standards for the remaining 17 chemicals of concern. For each chemical the first step in this procedure was to determine a critical value of vertical hydraulic conductivity for the upper soils. This critical value was the value at which the maximum plume was generated. This was determined by altering the vertical hydraulic conductivity through a range of 1×10^{-5} cm/sec to 1×10^{-8} cm/sec as discussed above for other chemicals of concern. The critical values for vertical hydraulic conductivity of the 17 compounds varied widely from 5×10^{-6}



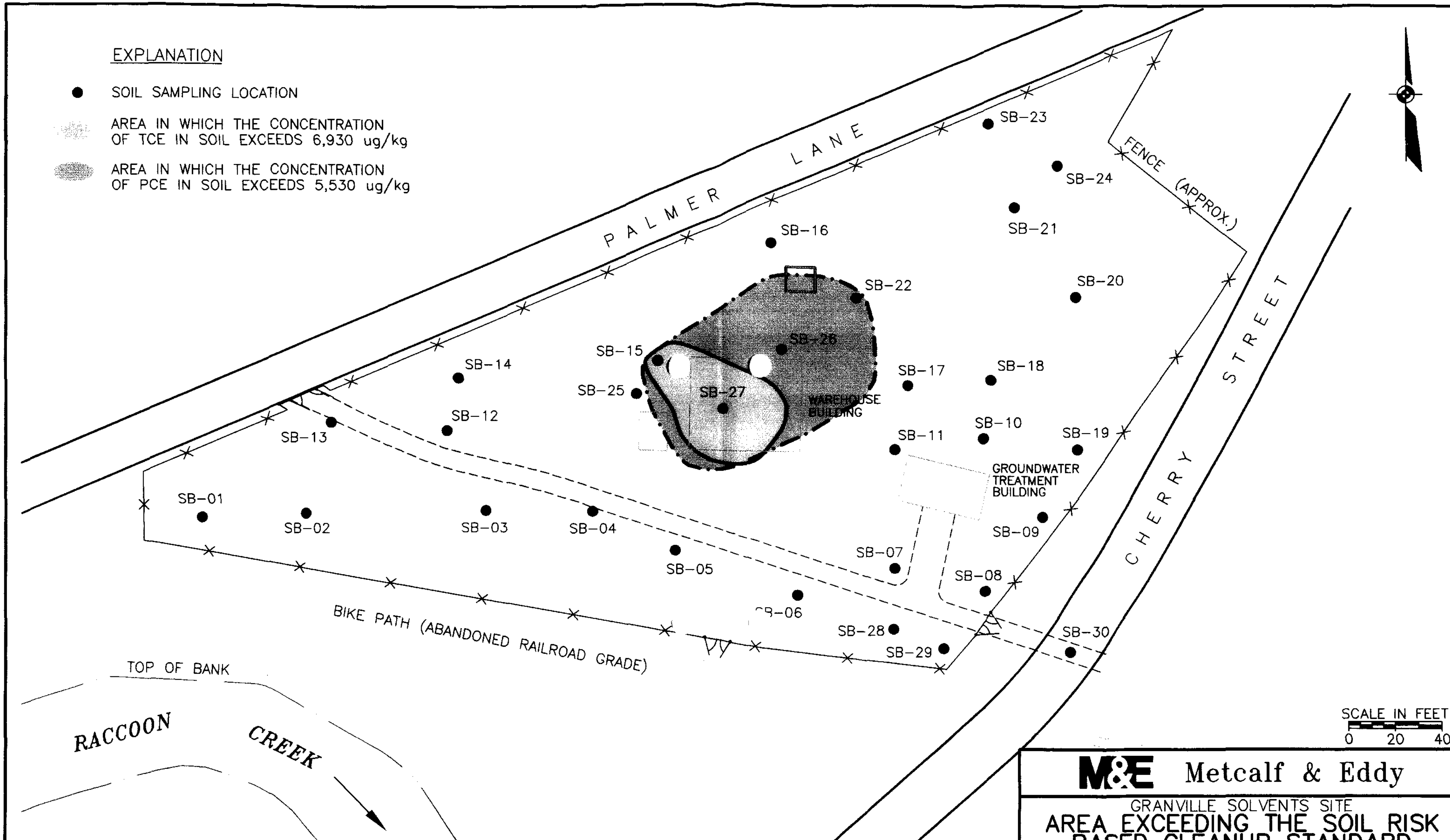
Metcalf & Eddy

GRANVILLE SOLVENTS SITE

ENGINEERING EVALUATION COST ANALYSIS
PRELIMINARY SVE WELL AND GROUNDWATER
EXTRACTION WELL LOCATIONS

GRANVILLE, OHIO

Project Number	
016688	
File Name	Figure
EECA-10A	19



M&E Metcalf & Eddy

GRANVILLE SOLVENTS SITE

AREA EXCEEDING THE SOIL RISK BASED CLEANUP STANDARD FOR BOTH TCE AND PCE

GRANVILLE, OHIO

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
GS-PRES2	MR	CAP	MAR 98	016688	20

cm/sec to 3 x 10^{-8} cm/sec. The resulting critical values for each chemical of concern are listed in Table 6 of the *Model Report* (May 1998).

Once the critical values of the vertical hydraulic conductivity were determined for each chemical of concern, the maximum allowed concentration for each chemical of concern was determined by systematically increasing the concentration of the chemical within the model until a point was reached at which the model predicted an exceedance of the MCL at the compliance zone. The concentration of a given chemical was adjusted uniformly in each cell and layer of the model representing the upper clay soils. The area within which the concentration was adjusted upward was the area of the GSS with significant soil impact as defined by TCE and PCE exceedances and as shown on Figure 18.

The soil treatment goal for each of the 17 chemicals of concern (the chemicals that provided insignificant impact to the aquifer at their current concentrations) is listed in Table 7 of the *Model Report* (May 1998). The actual concentrations of the 17 chemicals of concern measured at the GSS are much smaller than the maximum allowed soil concentrations discussed above. The individual maximum allowed concentrations, developed in the modeling project for each chemical of concern, provide a treatment standard for each chemical, regardless of whether the chemicals were detected above this standard in the GSS soil investigation.

The effects of the potential presence of DNAPLs for the soil treatment scenario are minimal. Soil treatment in the area of PCE and TCE impact will address the most heavily impacted soils on the site. The GSS soil investigation did not encounter evidence of DNAPL in the upper soils. However, if DNAPL were present in the soils, it would be present in the area where the soil impact is greatest and this areas coincides with the treatment area identified for PCE and TCE. All of the soil treatment options evaluated in the EE/CA will provide a level of treatment which will be effective for removing potential residual DNAPL that might be present but went undetected in the soil investigation.

2.5.6.1 Modeled Alternatives Evaluation

Of the three alternatives evaluated, only the no action alternative is unacceptable. This conclusion is based on evaluation of the alternatives using a calibrated groundwater flow model combined with a contaminant fate and transport model. The sensitivity of the model was thoroughly evaluated prior to simulating the alternative scenarios. The primary parameter with type IV sensitivity was the vertical hydraulic conductivity of the impacted upper clay soils. The uncertainty introduced by this parameter was carefully controlled as part of the simulation of alternatives, and only "worst case" soil permeability values were used for evaluation of each individual chemical of concern.

As a result of evaluation of Alternative 3, individual treatment standards for 19 chemicals of concern were developed based on the significance of impact on groundwater at the compliance zone as predicted by the transport model. The chlorinated solvents, PCE and TCE, were found to exceed the maximum allowed soil concentration at the existing concentrations determined in the GSS soil investigation.

The area identified for treatment included all horizontal locations where the soil concentration of PCE or TCE exceeded the respective maximum allowable concentrations. The soil concentrations for the remaining 17 chemicals of concern were much smaller than their respective treatment standards developed in the modeling project. The simulation with no soil remediation for these 17 chemicals of concern predicted no impact on groundwater at the compliance zone. In general, these chemicals of concern provided no groundwater plumes in excess of their MCLs even directly under the contaminated soils.

The affects of potential residual DNAPLs in the upper clay soil were not directly evaluated by the model. However the potential presence of DNAPLs was evaluated qualitatively outside of the modeling effort for each alternative. It was determined that alternative 2 (maintenance pumping to year 20 with no active soil remediation) was relatively sensitive to potential DNAPLs, while alternative 3 with soil remediation to individual maximum allowable soil concentrations is not likely to be sensitive to residual DNAPLs. The no-action alternative was also not sensitive to the potential of residual DNAPL, because the model indicated significant impact to the Village of Granville Wellfield with or without potential DNAPL.

2.5.7 Summary of Risk Evaluation and Removal Action Goals for the Treatment of Impacted Soils

The streamlined risk evaluation demonstrated that the revised soil treatment goals for the chlorinated and nonchlorinated VOC concentrations in soil are unlikely to pose a significant risk to individuals who may be employed on the site or perform excavation work on the site at some time in the future. The revised soil treatment goals were derived from the soil to groundwater model described previously.

For most of the chemicals of concern, the maximum concentrations detected in soil were lower than the soil treatment goal concentrations derived by the model. Estimated risks associated with the maximum concentrations detected in soil were within the acceptable range for industrial use of the property.

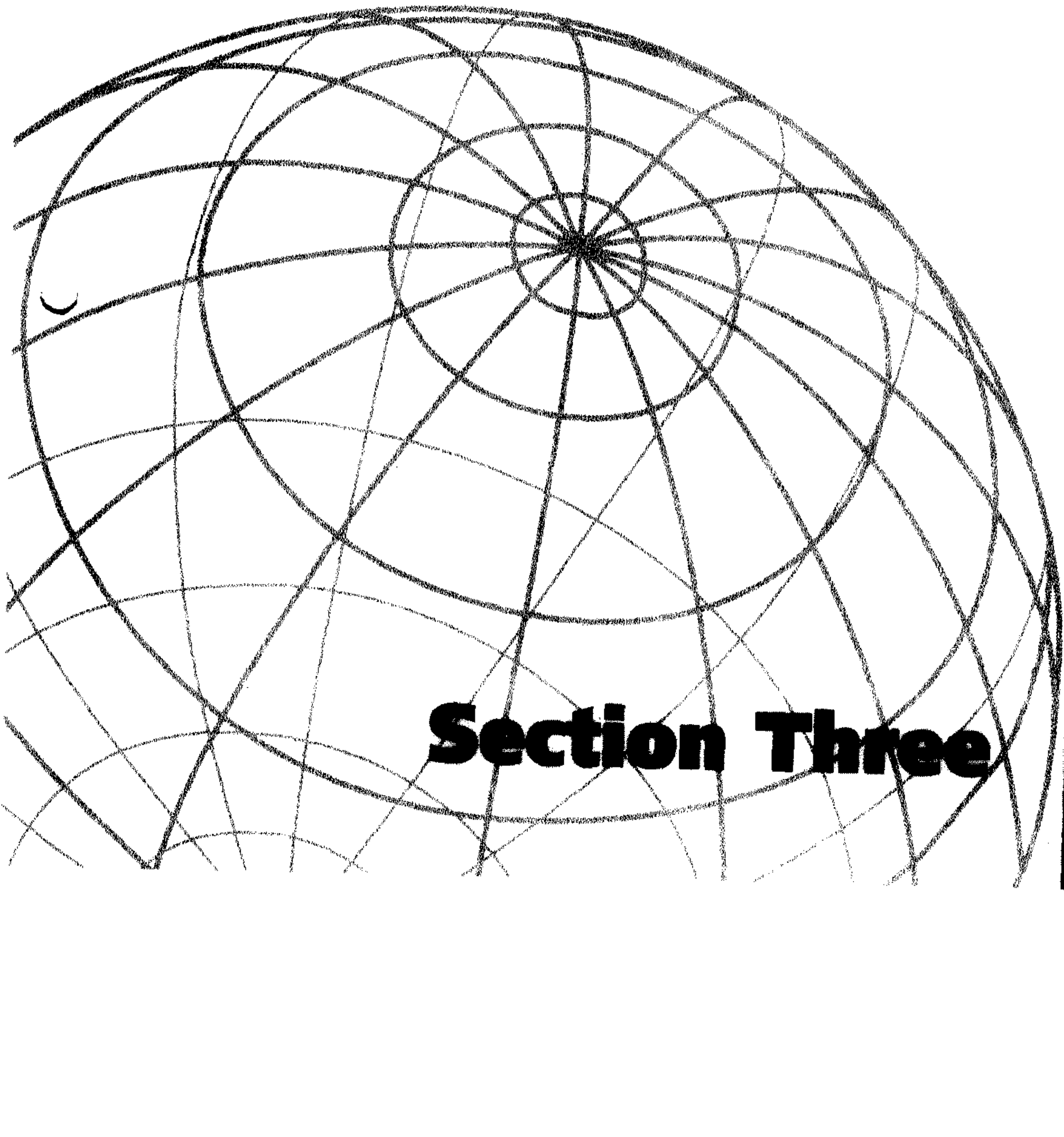
Treatment of soil based on estimated risks from direct contact would not be supported by the results of this streamlined risk assessment. The exclusive purpose of the treatment goals for soil is to achieve the no further action levels for the chemicals of concern in groundwater. Therefore, to be protective of groundwater while continuing to be protective of human health, soil containing TCE and PCE at concentrations above 6670 μg/kg and 5530 μg/kg, respectively, if removed, more quickly and permanently protect groundwater beneath the Site. A summary of the soil remediation goals for individual compounds in soil is provided in Table 2-15.

TABLE 2-15
SOIL TREATMENT GOALS FOR INDIVIDUAL COMPOUNDS FOR VOLATILE ORGANIC CHEMICALS OF CONCERN IN SOILS
(Concentrations in mg/kg)

	Maximum Detected Concentration	Modeled Treatment Goal	Revised Treatment Goal
1,1,1-Trichloroethane	1.7	147.81	147.81
1,1,2-Trichloroethane	0.012	4.0	4.0
1,1-Dichloroethane	0.011	59.22	59.22
1,1-Dichloroethene	0.007	2.74	0.0274[a)]
cis-1,2-Dichloroethene	4.6	48.85	48.85
trans-1,2-Dichloroethene	0.021	94.74	94.74
2-Butanone	0.014	360	360
Acetone	0.084	139	139
Benzene	0.014	3.0	3.0
Carbon disulfide	0.7	4.0	4.0
Chlorobenzene	0.027	66	66
Chloroform	0.002	62	62
Ethylbenzene	3.6	320.59	320.59
Methylene chloride	0.002	1.6	1.6
Tetrachloroethene	18	5.53	5.53
Toluene	0.34	725.2	725.2
Trichloroethene	11	6.67	6.67
Vinyl chloride	0.03	0.44	0.44
Xylenes	44	907	907

[a)] Revised based on estimated risk for an industrial worker.

3



Section Three

3.0 IDENTIFICATION OF REMOVAL ACTION OBJECTIVES

3.1 STATUTORY LIMITS

No statutory limits have been identified.

3.2 DETERMINATION OF REMOVAL ACTION SCOPE

The scope of the Removal Action is defined by the Administrative Order, Section V.2(g). The scope is defined by the following orders:

1) *"By December 20, 1994, install and run a groundwater extraction and treatment system which shall halt the migration of groundwater contamination (originating from the Site) toward the Village of Granville municipal wellfield. Treat and discharge all extracted water as required by the Work Plan and this Order."*

2) *"In addition, implement action which is necessary to ensure that any water contaminated with any contamination (originating from the Site) that enters the Village of Granville municipal wellfield drinking water supply meets all risk-based and all applicable federal and state drinking water standards. Such action may include utilization of, modification to, and/or addition to the Village of Granville municipal wellfield drinking water supply system. (For example, such action may be, or include, wellhead treatment which meets the performance standards of this Order; or, may be, or include, the installation of an appropriate alternative water supply.) Such action shall be implemented at the Village of Granville municipal wellfield to the extent necessary both to reinstate fully the capacity of PW-1 prior to its reactivation and to the extent necessary to prevent any loss in the Village of Granville municipal wellfield drinking water supply capacity (i.e., the collective capacity of PW-1, PW-2, and PW-3) caused, in whole or in part, because of contamination (originating from the Site), or the threat thereof, entering the Village of Granville municipal wellfield water supply."*

3) *"Design, install, and operate a groundwater extraction and treatment system which shall halt the migration of groundwater contamination (originating from the Site) toward the Village of Granville municipal wellfield and shall treat all groundwater within the contamination plume*

originating from the Site to no further action levels which assure protection of human health and the environment and attain all risk-based standards and federal and state ARARS."

4) *"Treat the soils at the Site to levels which will assure protection of human health and the environment, to levels which will attain all risk-based standards and federal and state ARARs, and to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels. Respondents shall propose a schedule to develop soil treatment objectives, no further action levels, performance monitoring parameters, and a plan for treatment of the soils, in the draft Work Plan."*

3.3 DETERMINATION OF REMOVAL ACTION GOALS

The removal action goals include continuing to halt the migration of groundwater contamination toward the Village of Granville Municipal Wellfield and reducing the levels of groundwater and soil contamination to no further action levels as required by the administrative order.

As described in Section 2 of this document, the soil treatment goals that will meet the stated requirements have been developed by modeling the fate and transport of compounds detected in the subsurface soils at the Site, and characterizing the risk posed by the residual compounds in Site soils. The soil treatment goals for the treatment of impacted soil are shown in Table 3-1.

3.4 DETERMINATION OF REMOVAL ACTION OBJECTIVES

The proposed removal action objectives are as follows:

- Prevent the migration of groundwater contamination exceeding action levels beyond extraction well EW-1 toward the VOG municipal wellfield.
- Reduce levels of groundwater contamination to approved no further action levels such that MCLs are not exceeded beyond EW1.
- Treat and discharge groundwater extracted from the aquifer in compliance with applicable standards.

TABLE 3-1
SOIL TREATMENT GOALS FOR THE GRANVILLE SOLVENTS SITE

Chemical of Concern	Maximum Concentration Detected in Soil (mg/Kg)	Applicable Soil Standard (Soil Treatment Goal) (mg/Kg)
1,1,1-trichloroethane	1.7	147.81
1,1,2-trichloroethane	0.012	4
1,1-dichloroethane	0.011	59.22
1,1-dichloroethene	0.007	0.0274
cis-1,2-dichloroethene	4.6	48.85
trans-1,2-dichloroethene	0.021	94.74
2-butanone	0.014	360
acetone	0.084	139
benzene	0.014	3
carbon disulfide	0.7	4
chlorobenzene	0.027	66
chloroform	0.002	62
ethylbenzene	3.6	320.59
methylene chloride	0.002	1.6
tetrachloroethene	18	5.53
toluene	0.34	725.20
trichloroethene	11	6.67
vinyl chloride	0.03	0.44
xylenes (total)	44	907.00

- Treat impacted soils to the extent necessary to assure that the levels of those contaminants for which Soil Treatment Goals are listed in Table 3-1 do not exceed MCLs in groundwater beyond EW1.

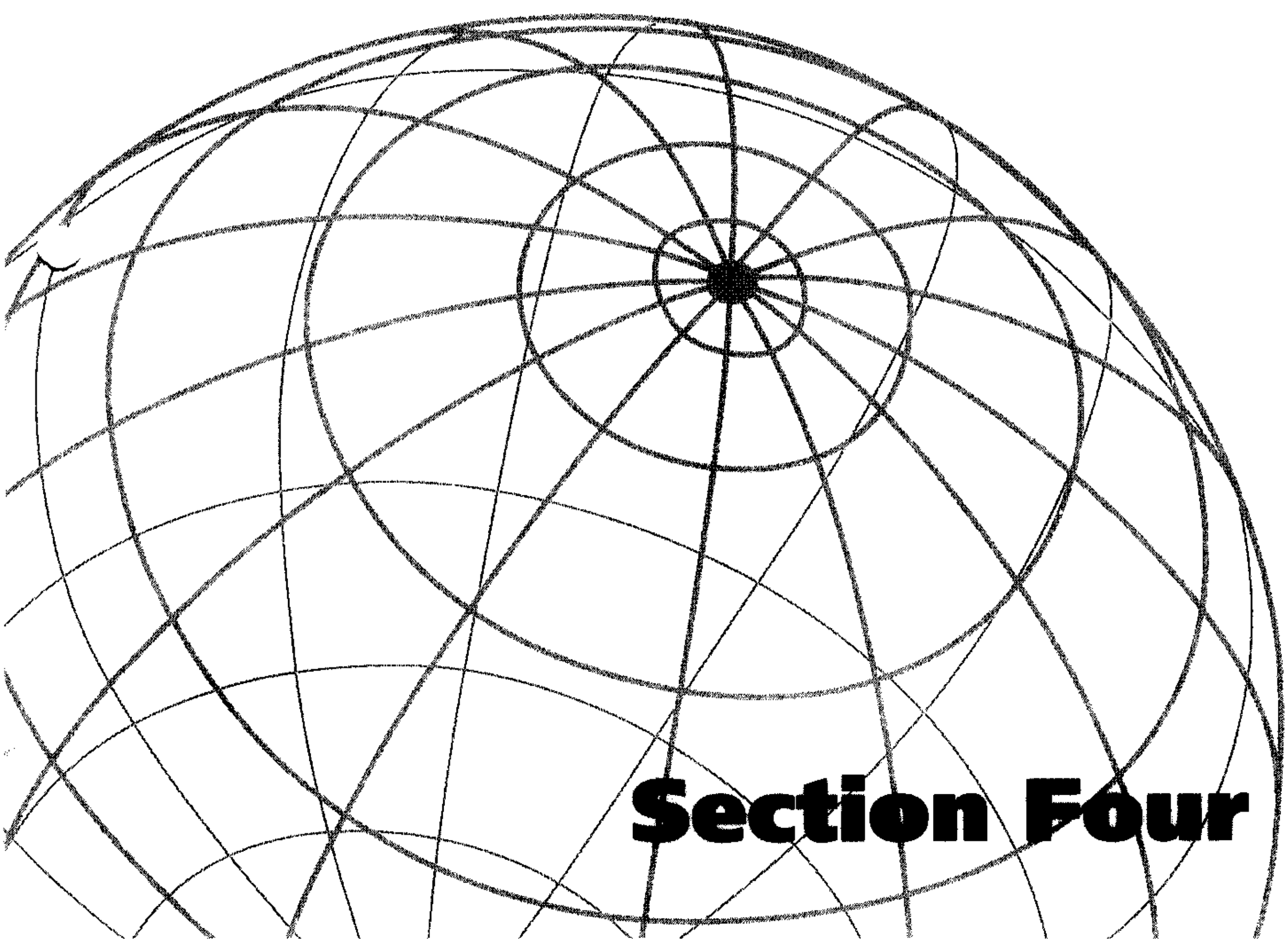
- Revise and continue to monitor performance of the groundwater extraction and treatment system and soil treatment system to confirm attainment of removal action objectives."

3.5 DETERMINATION OF REMOVAL ACTION SCHEDULE

The proposed schedule for the removal action is presented on the following table[1].

Activity	Number of Calendar Days Following Completion of Previous Activity
1. Submit final proposed EE/CA to EPA	0
2. EPA publishes notice of EE/CA and commences public comment period	NA
3. EPA holds public meeting to receive oral and written comments	N/A
4. EPA issues written responses to all significant comments and a final determination on selected alternative. EPA provides notice to the PRP Group	N/A
5. The PRP Group submits a draft Pilot Test	30
6. The PRP Group conducts a Pilot Test of the selected removal action	60
7. The PRP Group submits a Pilot Test Report to EPA	60
8. The PRP Group submits a draft design and construction document that shall include proposed studies, construction specifications, revised groundwater extraction and treatment system operating parameters, revised soil and groundwater monitoring/sampling programs, and schedules.	60
9. EPA issues comments to the PRP Group on draft design document	N/A
10 The PRP Group submits a revised design document	60
11. EPA approves acceptable revised design document and provides notice to the PRP Group	N/A
12. The PRP Group commences implementation of the removal activities in accordance with the approved plan	To be determined

[1] Subject to weather, equipment availability, and other *force majeure* events.



Section Four

4.0 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES

Previously, M&E had evaluated a wide range of technologies that might be effective in meeting the requirements of the AOC. This work has been summarized in the DTM (1995). As a result, several technologies have been eliminated and five have been carried forward for consideration. These alternatives fall into two broad categories: no action and soil contaminant removal with groundwater treatment. For those alternatives with soil contaminant removal, the Removal Action Goals have been determined based on contaminant fate and transport modeling which has been described in Section 2. The Soil Treatment Goals are listed in Table 3-1. Below is a brief description of each alternative, followed by an analysis of these alternatives.

4.1 IDENTIFICATION OF ALTERNATIVES

4.1.1 Alternative 1 - No Action

The "No Action" alternative would involve taking no action on the impacted soil detected at the Site and allowing natural leaching and degradation of the compounds present. Additionally, the current groundwater pump and treat system would be maintained and operated at its present status for a period of three years, and at a lower maintenance level for at least 17 additional years.

This alternative does not provide overall protection of human health and the environment, does not comply with ARARs, does not provide long-term effectiveness or permanence, nor does it provide short-term effectiveness. This alternative is retained in this analysis only as a means to provide a baseline against which other alternatives are compared and to be consistent with applicable regulatory guidance.

4.1.2 Alternative 2 - Soil Removal by Excavation and Disposal

Alternative 2 consists of the excavation and off-site disposal of soil based on the contaminant fate and transport modeling described in Section 2.5. Soils containing chemicals of concern which exceed their respective treatment goals would be removed by excavating and disposing these soils off-site. These soils are generally located beneath the area currently occupied by the warehouse building at depths of greater than six feet to the water table. The estimated volume of this material is approximately 4,600 yd^3. To excavate the material, sheet piling would be installed to minimize the quantity removed.

The current groundwater pump and treat system would be modified by the addition of a new extraction well, GSS-EW3, located near MW-P1 as described in the *Groundwater Flow and Contaminant Fate and Transport Model Report* (1996 and revised in 1998). This well would be screened to intercept the more highly impacted groundwater near the surface of the water table. The groundwater extraction and treatment system shall continue to be operated until the removal action goals and objectives are achieved. It is anticipated that this system would operate for approximately five years, after which time GSS-EW3 would extract at a maintenance pumping rate for a period of five years to capture leaching of residual soil contamination over that period of time.

The groundwater monitoring program is anticipated to be maintained at its current level for 5 years and at a reduced level for a period of 10 years prior to closure.

4.1.3 Alternative 3 - *In-Situ* Mixing/Hot Gas Vaporization of Soil Areas

Alternative 3 consists of the removal of soil contaminants by soil mixing and hot gas vaporization. The soil area is the same as described in Alternative 2. Soils overlying this area would be treated incidentally by this method resulting in a total volume of 5,000 yd^3 of soil treated.

The groundwater pump and treat system would be modified and operated as described in Alternative 2. In addition, the groundwater monitoring program is expected to be the same as in Alternative 2.

4.1.4 Alternative 4 - Treatment of Soils by Pneumatic Fracturing and Soil Vapor Extraction

Alternative 4 would consist of the removal of the contaminants by the use of SVE enhanced by pneumatic fracturing. The soil area is the same as previously described in Alternative 2. The soils overlying the area are expected to be remedied by induced airflow from the SVE system.

The groundwater pump and treat system would be modified and operated as described in Alternative 2. The groundwater monitoring program is expected to be as described in Alternative 2.

4.1.5 Alternative 5 - Treatment of Soils Via Thermally Enhanced Soil Vapor Extraction (Shell Process)

Alternative 5 would consist of the removal of contaminants by the application of an innovative technology that heats the soil with electrodes, draws a vacuum on the electrodes to recover and destroy the contaminants, while the formation desiccates, causing increased air permeability. The area is the same as described in Alternative 2.

The pump and treat system would be modified and operated as described in Alternative 2. The groundwater monitoring program would be expected to be maintained as described in Alternative 2.

4.2 ANALYSIS OF REMOVAL ACTION ALTERNATIVES

This section provides a comparative analysis of the Removal Action Alternatives in tabular form and a cost analysis, also in tabular form. Section 4.2.1 consists of a series of five tables that identify, evaluate the effectiveness and implementability, and estimates the cost of each alternative.

4.2.1 Comparative Analysis

The comparative analysis is provided in Tables 4-1 through 4-5. Each alternative is evaluated as to its anticipated effectiveness based on the following criteria:

1) Overall protection of human health and the environment;
2) Compliance with ARARs and other criteria, advisories, and standards;
3) Long-term effectiveness and permanence;
4) Reduction of toxicity, mobility, and volume through treatment; and
5) Short-term effectiveness.

Implementability is evaluated based on the following criteria:

1) Technical feasibility;
2) Administrative feasibility;
3) Availability of services and materials;

4) State acceptance; and

5) Community acceptance.

4.2.1.1 Alternative 1 - No Action

EFFECTIVENESS

Overall Protection of Human Health and the Environment:

If no action for removal or treatment of chemical constituents in soils occurs, natural leaching and degradation of the contaminants would ultimately lead to their disappearance from Site soils. Soil contaminants would continue to migrate into the groundwater beneath the Site and be collected by the groundwater treatment system. Established cleanup levels would not be achieved, nor would there be compliance with AOC requirements.

Extraction and treatment of Site groundwater would be necessary at the current pumping rate for at least 3 years and at a lower rate for approximately 17 years.

Compliance with ARARs and Other Criteria, Advisories, and Guidance:

No treatment measures would be taken to reduce soil contaminant concentrations. Natural leaching of the chemicals and degradation would bring contaminant levels in the soils below established cleanup levels over time. However, this alternative does not comply with the AOC requirement that soils be treated "...to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels."

Moreover, the alternative does not comply with the AOC requirement for treating "...all groundwater within the contamination plume originating from the Site to no further action levels which assure protection of human health and the environment and attain all risk-based standards and federal and state ARARs."

Long-Term Effectiveness and Permanence:

There would ultimately be no residual risk for the soils if the soil contaminants are left to naturally degrade and leach into the groundwater. Residual risk for Site groundwater would continue over the long-term because the soil contaminants would continue to contribute to Site groundwater contamination. Thus, in the long term, the no-action alternative would not be effective or permanent.

Reduction of Toxicity, Mobility, and Volume Through Treatment:

No treatment of soil contaminants is provided under the no-action alternative, but the natural processes of leaching and degradation would, over time, transfer soil contaminants into the groundwater. Because there would be a transfer of contaminants into another more mobile medium, there would be increases in toxicity, mobility, and volume for that medium.

Short-Term Effectiveness:

The absence of any remedial action for the soil under the no-action alternative indicates that no short-term impacts to the community or the environment will occur because there is no implementation. Contaminants leaching from the soil will ultimately increase the potential impacts from the groundwater.

IMPLEMENTABILITY

Technical Feasibility:

No technical feasibility considerations exist in the absence of any measures being taken to treat or remove the contaminants.

Administrative Feasibility:

Administrative difficulties are anticipated because no proactive measures would be taken to reduce contaminant levels below established cleanup levels, and AOC requirements to perform treatment will not be followed.

Availability of Services and Materials:

Availability of services and materials is not an issue for the no-action alternative, based on the absence of any protective measures taken to treat or remove the contaminants.

State Acceptance:

State acceptance would probably not be possible to obtain because no actions will be taken to reduce contaminant levels to below established cleanup levels and AOC requirements will not be followed.

Community Acceptance:

Community acceptance would probably not be possible to obtain because no actions will be taken to reduce contaminant levels to below established soil cleanup levels and AOC requirements will not be followed.

4.2.1.2 Alternative 2 - Soil Removal by Excavation and Disposal

EFFECTIVENESS

Overall Protection of Human Health and the Environment:

Excavation and disposal of soils containing chemicals of concern which exceed the Soil Treatment Goals listed in Table 3-1 will provide a high degree of overall protection of human health and the environment. Soil excavation and disposal will reduce the quantity of soil contaminants migrating into Site groundwater, permanently removing soil contaminants from soil. Moreover, it will comply with ARARs by satisfying the AOC requirements and be protective of the community, site workers, and the environment during implementation through effective site control measures.

With the continued extraction and treatment of groundwater at a high flow rate (about 300 gpm) for an estimated 5-year period, the groundwater plume is expected to have receded to beneath the area of the Site. Maintenance pumping at a low flow rate (about 40 gpm) would be required to continue for an additional 5 years.

Compliance with ARARs and Other Criteria, Advisories, and Guidance:

Soil excavation and disposal is a proven technology and would remove and dispose approximately 4,600 cubic yards of soils containing contaminants at levels above established Soil Treatment Goals listed in Table 3-1. Soil excavation and disposal combined with continued extraction and treatment of the site groundwater complies with the AOC requirements that soils be treated ... "to levels which assure, to the maximum extent practicable, that no groundwater beneath the soils becomes contaminated above groundwater no further action levels."

Long-Term Effectiveness and Permanence:

Soil excavation and disposal will be effective in reducing the migration of soil contaminants into the site groundwater. Natural leaching and degradation of contaminants in the soils outside the impacted soil area will reduce residual soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system.

Reduction of Toxicity, Mobility, and Volume Through Treatment:

Soil excavation and disposal would remove all soils containing volatile organic contaminants at concentrations above Soil Treatment Goals listed in Table 3-1. Soil excavation and disposal would reduce the toxicity, mobility, and volume of the volatile organic contaminants in Site soils (by their removal).

Soil excavation and disposal from the Site represents an irreversible process for the Site, but transport and disposal at a regulated, permitted hazardous waste landfill overall reduces toxicity and mobility but not volume.

Residual soil contaminants would degrade or leach into the groundwater and be captured by the groundwater treatment system. This will result in the elimination of soil contaminant toxicity, mobility, and volume through treatment.

Short-Term Effectiveness:

Risk to the nearby residents resulting from soil removal and disposal would be minimized by the implementation of effective Site controls. Impacts to Site workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used.

The implementation of this alternative is not expected to impose any measurable environmental impacts. The soil excavation and disposal alternative could be effectively implemented within 6 to 9 months of on-site activity. The treatment of residual soil contaminants outside the excavation area would occur through continued operation of the groundwater treatment system for a period of 10 years.

IMPLEMENTABILITY

Technical Feasibility:

Soil excavation and removal is a technically feasible but impractical option because nonconventional construction techniques would be required for its implementation. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible.

Administrative Feasibility:

The implementation of this alternative is considered administratively feasible. But Site controls to prevent off-site dispersion of airborne contaminants would be needed.

Availability of Services and Materials:

Conventional construction equipment and adequate disposal sites, along with the personnel required to operate it, are readily available. There are no foreseen problems associated with obtaining the services, materials, equipment, and disposal sites necessary to implement this alternative.

State Acceptance:

State acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment.

Community Acceptance:

Community acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. Truck traffic to and from the Site could be a community consideration.

4.2.1.3 Alternative 3 - *In-Situ* Mixing/Hot Gas Vaporization of Soil Areas

EFFECTIVENESS

Overall Protection of Human Health and the Environment:

The soil mixing alternative will provide a high degree of overall protection of human health and the environment. *In-situ* mixing/vaporization treatment of soils containing chemicals which exceed Soil Treatment Goals listed in Table 3-1 should effectively reduce the migration of soil contaminants into groundwater; permanently remove soil contaminants from soil; comply with ARARs by satisfying the AOC requirements; and be protective of the community, site workers, and the environment during implementation through the implementation of effective site control measures.

Continued extraction and treatment of groundwater at a high flow (about 300 gpm) would be required over an estimated 5-year period and maintenance pumping at a low flow rate (about 40 gpm) would continue an additional 5 years.

Compliance with ARARs and Other Criteria, Advisories, and Guidance:

In-situ mixing/vaporization is a proven technology and is expected to reduce chemical concentrations in the soil below their respective Soil Treatment Goals listed in Table 3-1. This soil treatment technology and the continued extraction and treatment of groundwater are expected to comply with the AOC requirement that soils be treated "...to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels."

Long-Term Effectiveness and Permanence:

The *in-situ* mixing/vaporization technology is expected to be effective in eliminating the migration of soil contaminants into groundwater. Natural leaching and degradation of remaining contaminants in the soils will reduce soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system.

Reduction of Toxicity, Mobility, and Volume Through Treatment:

The *in-situ* mixing/vaporization technology is expected remove at least 90 percent of the volatile organic contaminants in soils that are treated. *In-situ* mixing/vaporization will reduce the toxicity, mobility, and volume of the volatile organic contaminants in soils and satisfy statutory preferences for treatment. *In-situ* mixing/vaporization is an irreversible treatment process. Residual soil contaminants would degrade or leach into the groundwater and be captured by the groundwater treatment system. This will result in the elimination of soil contaminant toxicity, mobility, and volume through treatment.

Short-Term Effectiveness:

Risk to the nearby residents resulting from the *in-situ* treatment of soils with this alternative would not be measurable. The design of the *in-situ* mixing/vaporization treatment process will incorporate collection and treatment of the off-gases to control airborne organic compounds. Impacts to workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used. The implementation of this alternative is not expected to impose any measurable environmental impacts.

The estimated time to implement treatment of soils and reduce soil contaminants below their respective Soil Treatment Goals listed in Table 3-1 is less than three months. The treatment of residual soil contaminants not removed with the *in-situ* mixing/vaporization process would occur through continued operation of the groundwater treatment system for a period of 10 years.

IMPLEMENTABILITY

Technical Feasibility:

The *in-situ* soil mixing/hot gas vaporization technology is considered a technically feasible and reliable remedial option for soil contaminants. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible. The large cranes and mixing equipment required to implement this technology may have difficulty in accessing and moving around the project Site (e.g., overhead utilities, sloped topography, and the small size of the Site).

Administrative Feasibility:

The implementation of this alternative is considered administratively feasible. The off-gas treatment for the *in-situ* mixing technology may require an air permit-to-install or an exemption.

Availability of Services and Materials:

The *in-situ* mixing/vaporization technology, along with personnel required for implementation, is readily available. The services and materials necessary to implement this alternative are readily available.

State Acceptance:

State acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment.

Community Acceptance:

Community acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. The large cranes and mixing equipment needed to treat the soils with the *in-situ* mixing technology could be a community consideration.

4.2.1.4 Alternative 4 - Treatment of Soils by Pneumatic Fracturing and Soil Vapor Extraction

EFFECTIVENESS

Overall Protection of Human Health and the Environment:

Successful pneumatic fracturing and SVE treatment of impacted soils containing chemicals that exceed the Soil Treatment Goals listed in Table 3-1 will provide a high degree of overall protection of human health and the environment. Pneumatic fracturing and SVE treatment would effectively reduce the migration of soil contaminants into groundwater; permanently remove contaminants from the soil (within an estimated 5-year time period); comply with ARARs, and the AOC requirements; and be protective of the community, site workers, and the environment during implementation.

Continued extraction and treatment of groundwater at a high flow (about 300 gpm) would be required over an estimated 5-year period and maintenance pumping at a low flow rate (about 40 gpm) would continue an additional 5 years.

Compliance with ARARs and Other Criteria, Advisories, and Guidance:

SVE treatment is a proven technology and will reduce chemical concentrations in the soil that exceed their respective Soil Treatment Goals listed in Table 3-1. Successful application of pneumatic fracturing and SVE treatment and continued extraction and treatment of groundwater are expected to comply with ARARs and the AOC requirements including the requirement that soils be treated "...to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels."

Long-Term Effectiveness and Permanence:

Successful application of pneumatic fracturing and SVE treatment would be effective in eliminating the migration of soil contaminants into the groundwater (within an estimated 5-year time period). Natural leaching and degradation of contaminants in the soils outside the treatment area will reduce residual soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system.

Reduction of Toxicity, Mobility, and Volume Through Treatment:

Successful pneumatic fracturing and SVE treatment would be expected to remove 90% of the volatile organic contaminants in soils that are treated. Successful pneumatic fracturing and SVE treatment would reduce the toxicity, mobility, and volume of the volatile organic contaminants in soils and satisfy statutory preferences for treatment. SVE is an irreversible treatment process.

Residual soil contaminants would degrade or leach into the groundwater and be captured by the groundwater treatment system. This will result in the elimination of soil contaminant toxicity, mobility, and volume through treatment.

Short-Term Effectiveness:

Risk to the nearby residents resulting from the operation of the SVE treatment system would not be measurable. If necessary, controlled air emissions from the SVE treatment system could be incorporated into the system design. Impacts to site workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used.

The implementation of this alternative is not expected to impose any measurable environmental impacts. The estimated time to reduce soil contaminant concentrations in the area below the established Soil Treatment Goals listed in Table 3-1 with successful pneumatic fracturing and SVE treatment is less than 5 years. The treatment of residual soil contaminants outside the SVE treatment area would occur through continued operation of the groundwater treatment system throughout the SVE treatment process, and an additional five years following SVE treatment (approximately 10 years).

IMPLEMENTABILITY

Technical Feasibility:

The SVE technology, with enhancements to the technology using pneumatic fracturing to improve soil permeability, should be technically feasible for soil contaminants. A final judgement on technical feasibility will be made after a pilot application of the technology has been performed at the Site. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible.

Administrative Feasibility:

The implementation of this alternative is considered administratively feasible. Dependent upon the concentration of VOCs in the vapor extraction system off-gas, an air permit-to-install or an exemption may be necessary for the SVE system.

Availability of Services and Materials:

The SVE and pneumatic fracturing technologies, along with the personnel required to implement them, are readily available. The services and materials necessary to implement this alternative are readily available.

State Acceptance:

State acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs and AOC requirements, and anticipated overall protection of human health and the environment.

Community Acceptance:

Community acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs and AOC requirements, and anticipated overall protection of human health and the environment.

4.2.1.5 Alternative 5 - Treatment of Soils Via Thermally-Enhanced Soil Vapor Extraction

EFFECTIVENESS

Overall Protection of Human Health and the Environment:

Thermally-enhanced SVE of soils containing chemicals that exceed their respective Soil Treatment Goals listed in Table 3-1 will provide a high degree of overall protection of human health and the environment. Thermally-enhanced SVE would effectively reduce the migration of soil contaminants into the site groundwater; permanently remove contaminants from the soil; comply with ARARs by satisfying the AOC requirements; and be protective of the community, site workers, and the environment during implementation.

Enhanced extraction and treatment of groundwater at a high flow (about 300 gpm) would be required over an estimated 5-year period and maintenance pumping at a low flow rate (about 40 gpm) would continue an additional 5 years.

Compliance with ARARs and Other Criteria, Advisories, and Guidance:

Thermally-enhanced SVE is an innovative technology that has been developed for the treatment of VOCs in clay soils and is expected to reduce chemical concentrations in the soil below their respective Soil Treatment Goals listed in Table 3-1. Successful application of the thermally-enhanced SVE treatment process and continued extraction and treatment of groundwater are expected to comply with the AOC requirement that soils be treated "...to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels."

Long-Term Effectiveness and Permanence:

Successful application of the thermally-enhanced SVE treatment process is expected to be effective in eliminating the migration of soil contaminants into the groundwater. Natural leaching and degradation of residual chemicals outside of the treatment area will reduce soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system.

Reduction of Toxicity, Mobility, and Volume Through Treatment:

Successful treatment by thermally-enhanced SVE would almost quantitatively remove the volatile organic contaminants in the soils that are treated. Successful treatment by thermally-enhanced SVE will reduce the toxicity, mobility, and volume of the volatile organic contaminants in the soils and satisfy statutory preferences for treatment.

Thermally-enhanced SVE is an irreversible treatment process. Residual soil contaminants would degrade or leach into the groundwater and be captured by the groundwater treatment system. This would result in the elimination of soil contaminant toxicity, mobility, and volume through treatment.

Short-Term Effectiveness:

Risk to the nearby residents resulting from the operation of the thermally-enhanced SVE system would not be measurable. All emissions from the thermally-enhanced SVE system will be collected and treated in an on-site system to destroy any residual contaminants not destroyed *in-situ*. Impacts to site workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used.

The implementation of this alternative is not expected to impose any measurable environmental impacts. The estimated time to reduce soil chemical concentrations to below the established Soil Treatment Goals listed in Table 3-1 with thermally-enhanced SVE, including site preparation is 5 months. The treatment of residual soil contaminants would occur through continued operation of the groundwater treatment system for a period of 10 years.

IMPLEMENTABILITY

Technical Feasibility:

The thermally-enhanced SVE process should be a technically feasible and reliable remedial option for the soil contaminants. The first full-scale application of this technology was successfully completed at a project site in Indiana. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible.

Administrative Feasibility:

The implementation of this alternative is considered administratively feasible. An air permit-to-install may be required for the discharge stack of the emissions control system of the thermally-enhanced SVE system.

Availability of Services and Materials:

The equipment and personnel required to implement the thermally-enhanced SVE system should be available within a reasonable time frame. There are no anticipated problems associated with obtaining the services and materials necessary to implement this alternative are not anticipated.

State Acceptance:

State acceptance of this alternative would be likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment.

Community Acceptance:

Community acceptance of this alternative would be likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment.

4.2.2 Cost Analysis

Cost analysis is provided in Table 4-6. The estimated costs are separated into the direct capital costs, indirect capital costs, annual O&M costs, and a net present worth of the long-term O&M costs. For each of these, estimates are made of the costs anticipated for the soil actions and the groundwater actions.

ALTERNATIVE	NCP EVALUATION CRITERIA EFFECTIVENESS	IMPLEMENTABILITY	ESTIMATED COSTS
1. No Action on Soils Description • No-action on Soils • Existing Extraction System	*Overall Protection of Human Health and the Environment*: • No-action for removal or treatment would be taken on contaminants in the soils, but natural leaching and degradation of the contaminants would ultimately lead to their disappearance from the Site soils. • Soil contaminants would continue to migrate into the groundwater beneath the Site and be collected by the groundwater treatment system. Established cleanup levels would not be achieved, nor would there be compliance with AOC requirements. • Extraction and treatment of Site groundwater at the current rate for 3 years and at a lower rate for 17 years. *Compliance with ARARs and Other Criteria, Advisories, and Guidance*: • No treatment measures would be taken to reduce soil contaminant concentrations; natural leaching and degradation will bring contaminant levels in the soils below established cleanup levels. • Does not comply with the AOC requirement that soils be treated "...to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels." • Does not comply with the AOC requirement for treating "...all groundwater within the contamination plume originating from the Site to no further action levels which assure protection of human health and the environment and attain all risk-based standards and federal and state ARARs." *Long-Term Effectiveness and Permanence*: • There would ultimately be no residual risk for the soils if the soil contaminants are left to naturally degrade and leach into the groundwater. Residual risk for the Site groundwater would continue over the long-term because the soil contaminants would continue to contribute to the Site groundwater contamination. Thus, in the long term, the no-action alternative would not be effective or permanent. *Reduction of Toxicity, Mobility, and Volume Through Treatment*: • No treatment of soil contaminants is provided under the no-action alternative, but the natural process of leaching and degradation will, over time, transfer soil contaminants into the groundwater. • Because there would be a transfer of contaminants into another, more mobile medium, there would be increases in toxicity, mobility, and volume. *Short-Term Effectiveness*: • The absence of any remedial actions for the soil under the no-action alternative indicates that no short-term impacts to the community or the environment will occur because there is no implementation. Contaminants leaching from the soil will ultimately increase the potential impacts from the groundwater.	*Technical Feasibility*: • No technical feasibility considerations exist in the absence of any measures being taken to treat or remove the contaminants *Administrative Feasibility*: • Administrative difficulties are anticipated because no proactive measures will be taken to reduce contaminant levels below established cleanup levels, and AOC requirements to perform treatment will not be followed. *Availability of Services and Materials*: • Availability of services and materials is not an issue for the no-action alternative, based on the absence of any protective measures taken to treat or remove the contaminants. *State Acceptance*: • State acceptance would probably not be possible to obtain because no actions will be taken to reduce contaminant levels to below established cleanup levels and AOC requirements will not be followed. *Community Acceptance*: • Community acceptance would probably not be possible to obtain because no actions will be taken to reduce contaminant levels to below established soil cleanup levels and AOC requirements will not be followed.	Direct Capital Cost: Soil - None Groundwater - None Indirect Capital Cost: Soil - None Groundwater - None Annual O&M Cost: Soil - None Groundwater - $70,000 9 years, $31,000 11 years O&M Net Present Worth Cost: Groundwater - $638,384 Total Net Present Worth: $2,400,267

TABLE 4-2
REMEDIAL ALTERNATIVE EVALUATION SUMMARY
GRANVILLE SOLVENTS SITE SOURCE AREA
GRANVILLE, OHIO

ALTERNATIVE	NCP EVALUATION CRITERIA: EFFECTIVENESS	NCP EVALUATION CRITERIA: IMPLEMENTABILITY	NCP EVALUATION CRITERIA: ESTIMATED COSTS
2. **Remove Soil with Contaminant Concentrations Above Critical Concentration Levels by Excavation and Off-Site Disposal** Description • Remove soils with contaminant concentrations above critical concentration levels • Enhanced groundwater removal with the addition of GSS-EW3[1] • Low rate pumping of 40 gpm for 5 years • Groundwater monitoring at current level for 5 years, reduced level for 10 years	_Overall Protection of Human Health and the Environment:_ • Soil excavation and disposal of soils with contaminant concentrations above critical concentration levels will provide a high degree of overall protection of human health and the environment. Soil excavation and disposal would reduce the quantity of soil contaminants migrating into the Site groundwater; permanently remove soil contaminants from the Site soil; comply with ARARs by satisfying the AOC requirements; and be protective of the community, Site workers, and the environment during implementation through the implementation of effective Site control measures. • Enhanced extraction and treatment of the Site groundwater at a high flow rate (about 300 gpm) would be required over an estimated 5-year period and maintenance pumping at a low flow rate (about 40 gpm) would continue an additional 5 years[1]. _Compliance with ARARs and Other Criteria, Advisories, and Guidance:_ • Soil excavation and disposal is a proven technology and would remove and dispose approxi[illegible]ely 4,600 c[illegible] yards of soils containing contaminants above critical concentration levels. • Soil excavation and disposal combined with continued extraction and treatment of the Site groundwater complies with the AOC requirements that soils be treated ... "to levels which assure, to the maximum extent practicable, that no groundwater beneath the soils becomes contaminated above groundwater no further action levels." _Long-Term Effectiveness and Permanence:_ • Soil excavation and disposal of soils with contaminant concentrations above ciritical concentration levels will be effective in reducing the migration of soil contaminants into the Site groundwater. • Natural leaching and degradation of contaminants in the soils outside of this area will reduce soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system. _Reduction of Toxicity, Mobility, and Volume Through Treatment:_ • Soil excavation and disposal would remove all soils containing volatile organic contaminants at concentrations above their respecitive critical concentration levels. • Soil excavation and disposal would reduce the toxicity, mobility, and volume of the volatile organic contaminants in the Site soils (by their removal). • Soil excavation and disposal from the Site represents an irreversible process for the Site, but transport and disposal at a regulated, permitted hazardous waste landfill overall reduces toxicity and mobility but not volume. • Residual soil contaminants would degrade or leach into the groundwater and be captured by the groundwater treatment system. This will result in the elimination of soil contaminant toxicity, mobility, and volume through treatment. _Short-Term Effectiveness:_ • Risk to the nearby residents resulting from the soil removal and disposal would be minimized by the implementation of effective Site controls. • Impacts to Site workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used. • The implementation of this alternative is not expected to impose any measurable environmental impacts. • The soil excavation and disposal alternative could be effectively implemented within 6 to 9 months of on-Site activity. • The treatment of residual soil contaminants not removed would occur through continued operation of the groundwater treatment system. The estimated time to reduce residual soil contaminant concentrations to levels which are protective of groundwater is 10 years.	_Technical Feasibility:_ • Soil excavation and removal is a technically feasible but impractical, inasmuch as nonconventional construction techniques would be utilized for its implementation. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible. _Administrative Feasibility:_ • The implementation of this alternative is considered administratively feasible. But Site controls to prevent off-Site dispersion of airborne contaminants would be needed. _Availability of Services and Materials:_ • Conventional construction equipment and adequate disposal Sites, along with the personnel required to operate it, are readily available. • There are no foreseen problems associated with obtaining the services, materials, equipment, and disposal Sites necessary to implement this alternative. _State Acceptance:_ • State acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. _Community Acceptance:_ • Community acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. Truck traffic to and from the Site could be a community consideration.	_Direct Capital Cost:_ Soil - $3,296,257 Groundwater - $75,900 _Indirect Capital Cost:_ Soil - $356,960 Groundwater - $13,543 _Annual O&M Cost:_ Soil - None Groundwater - $70,000 (years 1-5) $31,000 (years 6-10) _O&M Net Present Worth Cost:_ • Enhanced groundwater pumping - $408,223 • Groundwater monitoring - $977,497 _Total Net Present Worth:_ $5,128,370

[1] Based on groundwater modeling results.

TABLE 4-3
REMEDIAL ALTERNATIVE EVALUATION SUMMARY
GRANVILLE SOLVENTS SITE SOURCE AREA
GRANVILLE, OHIO

	NCP EVALUATION CRITERIA		
ALTERNATIVE	**EFFECTIVENESS**	**IMPLEMENTABILITY**	**ESTIMATED COSTS**
3. **Treat Soils with Contaminant Concentrations Above Critical Concentration Levels by *In-Situ* Mixing/Hot Gas Vaporization** Description • Treat soils with contaminant concentrations above critical concentration levels by *in-situ* mixing/hot gas vaporization • Enhanced groundwater removal with the addition of GSS-EW3[1] • High rate pumping of 300 gpm for 5 years • Low rate pumping of 40 gpm for 5 years • Groundwater monitoring at current level for 5 years, reduced level for 10 years	<u>*Overall Protection of Human Health and the Environment*</u>: • The soil mixing alternative will provide a high degree of overall protection of human health and the environment. *In-situ* mixing/vaporization treatment of soils exceeding with contaminant concentrations above critical concentration levels should effectively reduce the migration of soil contaminants into the Site groundwater; permanently remove soil contaminants from the Site soil; comply with ARARs by satisfying the AOC requirements; and be protective of the community, Site workers, and the environment during implementation through the implementation of effective Site control measures. • Continued extraction and treatment of the Site groundwater at a high flow (about 300 gpm) would be required over an estimated 5 year period and maintenance pumping at a low flow rate (about 40 gpm) would continue an additional 5 years. <u>*Compliance with ARARs and Other Criteria, Advisories, and Guidance*</u>: • *In-situ* mixing/vaporization is a proven technology and is expected to reduce soil contaminant concentrations below critical concentration levels. • This treatment technology and the continued extraction and treatment of Site groundwater are expected to comply with the AOC requirement that soils be treated "...to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels." <u>*Long-Term Effectiveness and Permanence*</u>: • The *in-situ* mixing/vaporization technology is expected to be effective in eliminating the migration of soil contaminants into the Site groundwater. • Natural leaching and degradation of residual soil contaminants will reduce soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system. <u>*Reduction of Toxicity, Mobility, and Volume Through Treatment*</u>: • The *in-situ* mixing/vaporization technology is expected to remove at least 90 percent of the volatile organic contaminants in soils that are treated. • *In-situ* mixing/vaporization will reduce the toxicity, mobility, and volume of the volatile organic contaminants in the Site soils and satisfy statutory preferences for treatment. • *In-situ* mixing/vaporization is an irreversible treatment process. • Residual soil contaminants would degrade or leach into the groundwater and be captured by the groundwater treatment system. This will result in the elimination of soil contaminant toxicity, mobility, and volume through treatment. <u>*Short-Term Effectiveness*</u>: • Risk to the nearby residents resulting from the *in-situ* treatment of the Site soils with this alternative would not be measurable. The design of the *in-situ* mixing/vaporization treatment process will incorporate collection and treatment of the off-gases to control airborne organic compounds. • Impacts to Site workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used. • The implementation of this alternative is not expected to impose any measurable environmental impacts. • The estimated time to implement treatment of the soils and reduce soil concentrations below the established soil cleanup levels is less than three months. • The treatment of residual soil contaminants not removed would occur through continued operation of the groundwater treatment system. The estimated time to reduce residual soil contaminant concentrations to levels which are protective of groundwater is 10 years.	<u>*Technical Feasibility*</u>: • The *in-situ* soil mixing/hot gas vaporization technology is considered a technically feasible and reliable remedial option for the Site soil contaminants. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible. • The large cranes and mixing equipment required to implement this technology may have difficulty in accessing and moving around the project Site (e.g., overhead utilities, sloped topography, and the small size of the Site. <u>*Administrative Feasibility*</u>: • The implementation of this alternative is considered administratively feasible. The off-gas treatment for the *in-situ* mixing technology will require an air permit-to-install or an exemption. <u>*Availability of Services and Materials*</u>: • The *in-situ* mixing/vaporization technology, along with personnel required for implementation, is readily available. • The services and materials necessary to implement this alternative are readily available. <u>*State Acceptance*</u>: • State acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. <u>*Community Acceptance*</u>: • Community acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. • The large cranes and mixing equipment needed to treat the soils with the *in-situ* mixing technology could be a community consideration.	<u>Direct Capital Cost</u>: Soil - $1,079,390 Groundwater - $75,900 <u>Indirect Capital Cost</u>: Soil - $186,690 Groundwater - $13,543 <u>Annual O&M Cost</u>: Soil - None Groundwater - $70,000 (years 1-5) $31,000 (years 6-10) <u>O&M Net Present Worth Cost</u>: • Enhanced groundwater pumping - $408,223 • Groundwater monitoring - $977,497 <u>Total Net Present Worth</u>: $2,741,243

[1] Based on groundwater modeling results

ALTERNATIVE	NCP EVALUATION CRITERIA EFFECTIVENESS	IMPLEMENTABILITY	ESTIMATED COSTS
4. **Treat Soils with Contaminant Concentrations Above Critical Concentration Levels by Pneumatic Fracturing and Soil Vapor Extraction** Description • Treat soils with contaminant concentrations above critical concentration levels by pneumatic fracturing and SVE • Enhanced groundwater extraction with the installation of GSS-EW3[1] • High rate pumping of 300 gpm for 5 years • Low rate pumping of 40 gpm for 5 years • Groundwater monitoring at the current level for 5 years, reduced level for 10 years	Overall Protection of Human Health and the Environment: • Successful pneumatic fracturing and SVE treatment of soils with contaminant concentrations above critical concentration levels would provide a high degree of overall protection of human health and the environment. Pneumatic fracturing and SVE treatment could effectively reduce the migration of soil contaminants into the Site groundwater; permanently remove contaminants from the soil (within an estimated 5-year time period); comply with ARARs by satisfying the AOC requirements; and be protective of the community, Site workers, and the environment during implementation. • Enhanced extraction and treatment of the Site groundwater at a high flow (about 300 gpm) would be required over an estimated 5-year period and maintenance pumping at a low flow rate (about 40 gpm) would continue an additional 5 years[1]. Compliance with ARARs and Other Criteria, Advisories, and Guidance: • SVE treatment is a proven technology and should reduce contaminant soil concentrations below critical concentration levels. • Successful application of pneumatic fracturing and SVE treatment and continued extraction and treatment of Site groundwater are expected to comply with AOC requirement that soils be treated "...to levels which will assure, to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels." Long-Term Effectiveness and Permanence: • Successful application of pneumatic fracturing and the SVE treatment would be effective in eliminating the migration of soil contaminants into the groundwater (within an estimated 5-year time period). • Natural leaching and degradation of residual soil contaminants will reduce soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system. Reduction of Toxicity, Mobility, and Volume Through Treatment: • Successful pneumatic fracturing and SVE treatment would be expected to remove 90% of the volatile organic contaminants in the soils that are treated. • Successful pneumatic fracturing and SVE treatment would reduce the toxicity, mobility, and volume of the volatile organic contaminants in the soils and satisfy statutory preferences for treatment. • SVE is an irreversible treatment process. • Residual soil contaminants would degrade or leach into the groundwater and be captured by the groundwater treatment system. This will result in the elimination of soil contaminant toxicity, mobility, and volume through treatment. Short-Term Effectiveness: • Risk to the nearby residents resulting from the operation of the SVE treatment system would not be measurable. If necessary, controlled air emissions from the SVE treatment system could be incorporated into the system design. • Impacts to Site workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used. • The implementation of this alternative is not expected to impose any measurable environmental impacts. • The estimated time to reduce soil contaminant concentrations below the critical concentration levels with successful pneumatic fracturing and SVE treatment is less than 5 years. • The treatment of residual soil contaminants not removed would occur through continued operation of the groundwater treatment system. The estimated time to reduce residual soil contaminant concentrations to levels which are protective of groundwater is 10 years.	Technical Feasibility: • The SVE technology, with enhancements to the technology using pneumatic fracturing to improve soil permeability, should be technically feasible for the Site soil contaminants. A final judgement on technical feasibility will be made after a pilot-application of the technology has been performed at the Site. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible. Administrative Feasibility: • The implementation of this alternative is considered administratively feasible. Dependent upon the concentration of volatile organic compounds in the vapor extraction system off-gas, an air permit-to-install or an exemption may be necessary for the SVE system. Availability of Services and Materials: • The SVE and pneumatic fracturing technologies, along with the personnel required to implement them, are readily available. • The services and materials necessary to implement this alternative are readily available. State Acceptance: • State acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. Community Acceptance: • Community acceptance of this alternative is considered likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment.	Direct Capital Cost: Soil - $302,358 Groundwater - $75,900 Indirect Capital Cost: Soil - $117,805 Groundwater - $13,543 Annual O&M Cost: Soil - $128,340 (years 1-5) Groundwater - $70,000 (years 1-5) $31,000 (years 6-10) O&M Net Present Worth Cost: • Enhanced groundwater pumping - $408,223 • Groundwater monitoring - $977,497 • Soil treatment - $555,645 Total Net Present Worth:[1] $2,450,961

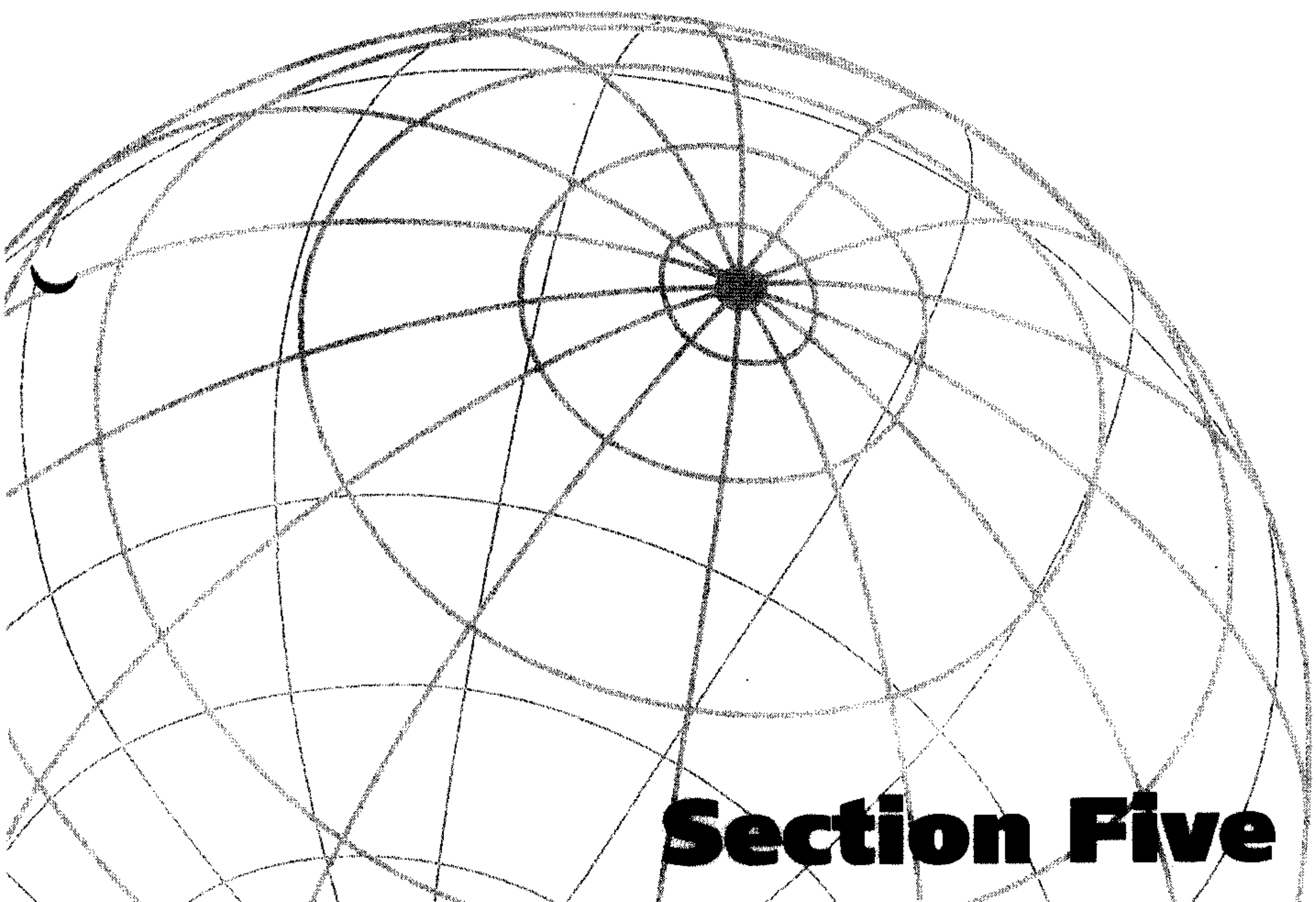
[1] Based on groundwater modeling results

ALTERNATIVE	NCP EVALUATION CRITERIA EFFECTIVENESS	IMPLEMENTABILITY	ESTIMATED COSTS
5. **Treat Soils with Contaminant Concentrations Above Critical Concentration Levels by *In-Situ* Thermal Treatment (Shell Process)** Description • Treat soils with contaminant concentrations above critical concentration levels by *in-situ* thermal treatment • Enhanced groundwater extraction with the installation of GSS-EW3[1] • High rate pumping of 300 gpm for 5 years • Low rate pumping of 40 gpm for 5 years • Groundwater monitoring at the current level for 5 years, reduced level for 10 years	*Overall Protection of Human Health and the Environment:* • Thermally-enhanced soil vapor extraction of soils with contaminant concentrations above critical concentration levels would provide a high degree of overall protection of human health and the environment. Thermally-enhanced soil vapor extraction would effectively reduce the migration of soil contaminants into the Site groundwater; permanently remove contaminants from the soil; comply with ARARs by satisfying the AOC requirements; and be protective of the community, Site workers, and the environment during implementation. • Enhanced extraction and treatment of the Site groundwater at a high flow (about 300 gpm) would be required over an estimated 5-year period and maintenance pumping at a low flow rate (about 40 gpm) would continue an additional 5 years.[1] *Compliance with ARARs and Other Criteria, Advisories, and Guidance:* • Thermally-enhanced soil vapor extraction is an innovative technology that has been developed for the treatment of VOCs in clay soils and is expected to reduce contaminant concentrations below critical concentration levels. • Successful application of the thermally-enhanced soil vapor extraction treatment process and continued extraction and treatment of Site groundwater are expected to comply with AOC requirement that soils be treated "...to levels [illegible] ch will ass[illegible] to the maximum extent practicable, that no groundwater beneath the soils will become contaminated above the groundwater no further action levels." *Long-Term Effectiveness and Permanence:* • Successful application of the thermally-enhanced soil vapor extraction treatment process is expected to be effective in eliminating the migration of soil contaminants into the groundwater. • Natural leaching and degradation of residual soil contaminants will reduce soil contaminant levels. These contaminants will be removed through continued operation of the groundwater treatment system. *Reduction of Toxicity, Mobility, and Volume Through Treatment:* • Successful treatment by thermally-enhanced soil vapor extraction would almost quantitatively remove the volatile organic contaminants in the soils that are treated. • Successful treatment by thermally-enhanced soil vapor extraction will reduce the toxicity, mobility, and volume of the volatile organic contaminants in the soils and satisfy statutory preferences for treatment. • Thermally-enhanced soil vapor extraction is an irreversible treatment process. • Residual soil contaminants would degrade or leach into the groundwater and be captured by the [illegible]undwater t[illegible]ment system. This will result in the elimination of soil contaminant toxicity, mobility, and volume through treatment. *Short-Term Effectiveness:* • Risk to the nearby residents resulting from the operation of the thermally-enhanced soil vapor extraction system would not be measurable. All emissions from the thermally-enhanced soil vapor extraction system will be collected and treated in an on-Site system to destroy any residual contaminants not destroyed *in-situ*. • Impacts to Site workers during implementation of this remedial action would be minimized by ensuring that proper personal protective equipment is provided and used. • The implementation of this alternative is not expected to impose any measurable environmental impacts. • The estimated time to reduce soil contaminant concentrations below the critical concentration levels with thermally-enhanced soil vapor extraction is 5 months, including Site preparation. • The treatment of residual soil contaminants would occur through continued operation of the groundwater treatment system. The estimated time to reduce residual soil contaminant concentrations to levels which are protective of groundwater is 10 years.	*Technical Feasibility:* • The thermally-enhanced soil vapor extraction process should be a technically feasible and reliable remedial option for the Site soil contaminants. The first full-scale application of this technology is currently being conducted at a project Site in Indiana. Further judgement on technical feasibility will be made once the results of the first full-scale application of this technology are available. All proposed groundwater extraction and treatment technologies have been demonstrated as technically feasible. *Administrative Feasibility:* • The implementation of this alternative is considered administratively feasible. An air permit-to-install may be required for the discharge stack of the emissions control system of the thermally-enhanced soil vapor extraction system. *Availability of Services and Materials:* • The equipment and personnel required to implement the thermally-enhanced soil vapor extraction system should be available within a reasonable time frame. • If the thermally-enhanced soil vapor extraction process is demonstrated to be successful during the first full-scale application, problems associated with obtaining the services and materials necessary to implement this alternative are not anticipated. *State Acceptance:* • State acceptance of this alternative would be likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment. *Community Acceptance:* • Community acceptance of this alternative would be likely based on its anticipated effectiveness, compliance with ARARs, and anticipated overall protection of human health and the environment.	Direct Capital Cost: Soil - $1,132,750 Groundwater - $75,900 Indirect Capital Cost: Soil - $125,120 Groundwater - $13,543 Annual O&M Cost: Soil - None Groundwater - $70,000 (years 1-5) $31,000 (years 6-10) O&M Net Present Worth Cost: • Enhanced groundwater pumping - $408,223 • Groundwater monitoring - $977,497 Total Net Present Worth: $2,733,033

[1] Based on groundwater modeling results

TABLE 4-6
COMPARISON OF COSTS FOR ALTERNATIVES 1 THROUGH 5

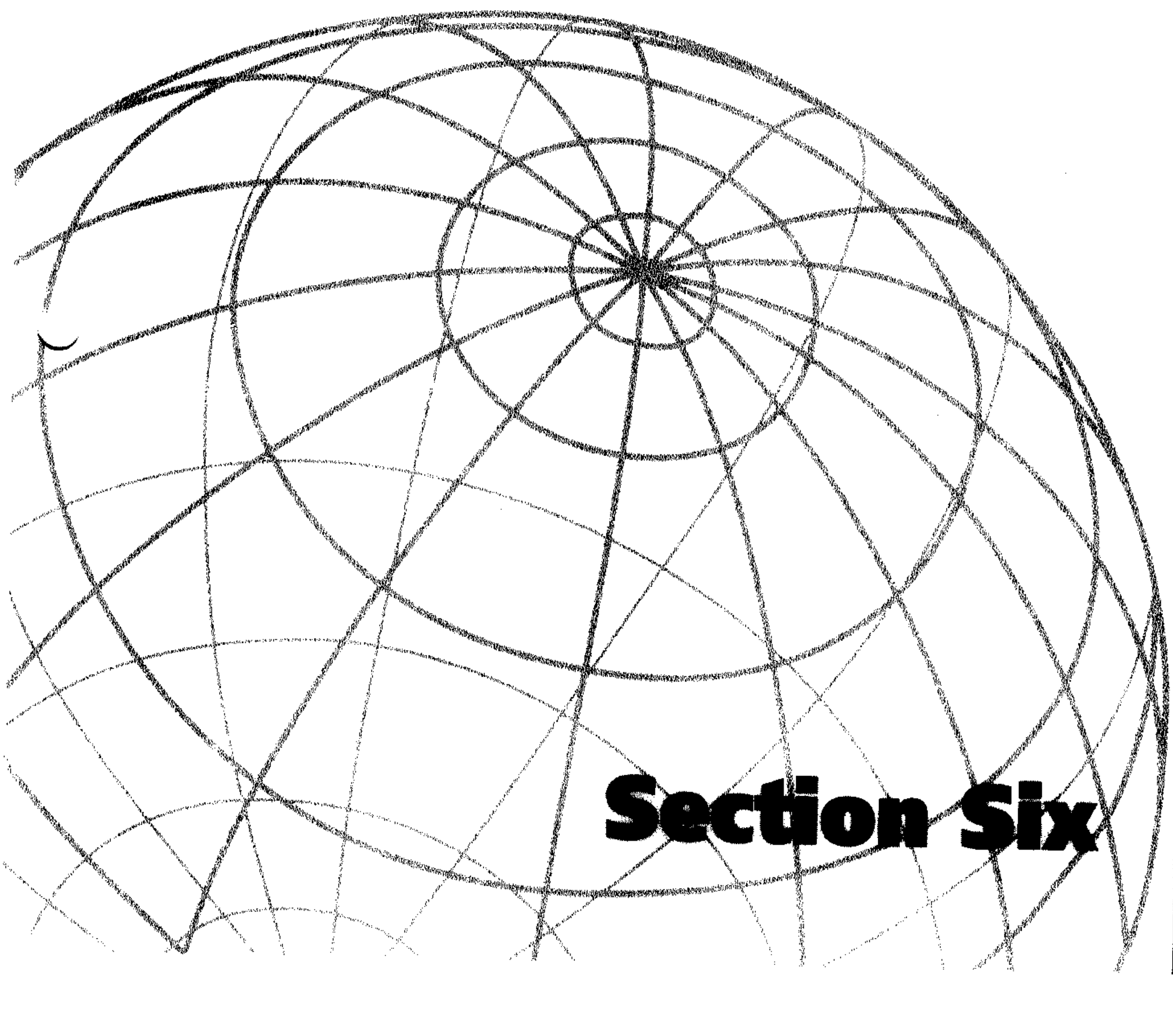
Alternative Number	Soil Remedy	Soil Remedy Estimated Direct Capital Cost	Soil Remedy Estimated Indirect Capital Cost	Soil Remedy Estimated Annual O&M Cost	Soil Remedy Estimated Net Present Worth Cost	Groundwater Remedy	Groundwater Remedy Estimated Direct Capital Cost	Groundwater Remedy Estimated Indirect Capital Cost	Groundwater Remedy Estimated Annual O&M Cost	Groundwater Remedy Estimated Net Present Worth Cost	Groundwater Monitoring Scenario	Estimated Net Present Worth Cost of Groundwater Monitoring	TOTAL NET PRESENT WORTH COST
1	No Action	None	None	None	None	Existing system	None	None	$70,000 (years 1-9); $31,000 (years 9-20)	$638,394	Monitor for 16 years at current level and 15 years at reduced level	$1,761,833	$2,400,267
2	Soil Removal by Excavation and Disposal	$3,296,257	$356,960	None	$3,653,217	Install EW-3 as new extraction well and operate EW-3 for 5 years at 300 ppm then maintenance pump from EW-3 for 5 more years at 40 gpm.	$75,900	$13,543	$70,000 (years 1-5) $31,000 (years 6-10)	$408,223	Monitor for 5 years at current level and 10 years at reduced level.	$977,497	$5,128,370
3	*In-Situ* Mixing/Hot Gas Vaporization of Soil Areas	$1,079,390	$186,690	None	$1,266,080	Install EW-3 as new extraction well and operate EW-3 for 5 years at 300 ppm then maintenance pump from EW-3 for 5 more years at 40 gpm.	$75,900	$13,543	$70,000 (years 1-5) $31,000 (years 6-10)	$408,223	Monitor for 5 years at current level and 10 years at reduced level.	$977,497	$2,741,243
	Treatment of Soils Via Pneumatic Fracturing and Soil Vapor Extraction	$302,358	$117,805	$128,340	$828,386 (based on 5 years of O&M costs)	Install EW-3 as new extraction well and operate EW-3 for 5 years at 300 ppm then maintenance pump from EW-3 for 5 more years at 40 gpm.	$75,900	$13,543	$70,000 (years 1-5) $31,000 (years 6-10)	$408,223	Monitor for 5 years at current level and 10 years at reduced level.	$977,497	$2,450,961
5	Treatment of Soils Via Thermally-Enhanced Soil Vapor Extraction (Shell Process)	$1,132,750	$125,120	None	$1,257,870	Install EW-3 as new extraction well and operate EW-3 for 5 years at 300 ppm then maintenance pump from EW-3 for 5 more years at 40 gpm.	$75,900	$13,543	$70,000 (years 1-5) $31,000 (years 6-10)	$408,223	Monitor for 5 years at current level and 10 years at reduced level.	$977,497	$2,733,033



Section Five

5.0 RECOMMENDED REMOVAL ACTION ALTERNATIVE

Based on the comparative evaluation of effectiveness, implementability and cost above, the recommended alternative is Alternative 4. As discussed above, this alternative consists of treatment of soils by pneumatic fracturing and soil vapor extraction, and the enhancement and continued operation of the groundwater extraction and treatment system to attain the Removal Action Goals and Objectives as set forth in Section 3. This alternative also includes continued monitoring/sampling to confirm attainment of the proposed removal action objectives.



Section Six

6.0 REFERENCES

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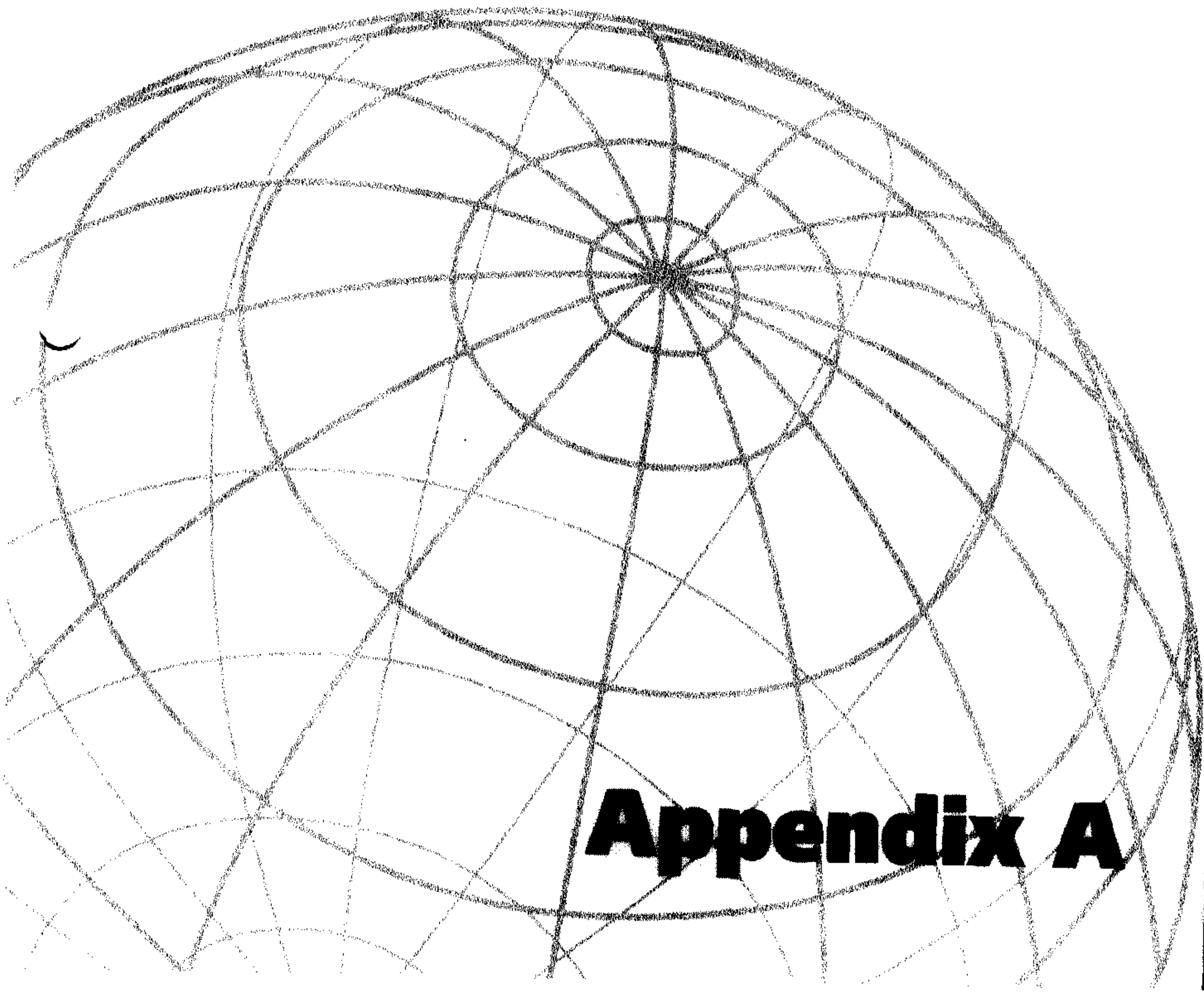

Appendix A

APPENDIX A

SOIL AND GROUNDWATER DATA

A-1 GROUNDWATER DATA

A.1.1 April-May 1994 Data

A.1.2 1996 Data

A-2 SOIL DATA

A.2.1 April-May 1994 Data

A.2.2 1996 Data

APPENDIX A-1

GROUNDWATER DATA

APPENDIX A.1.1

GROUNDWATER DATA

April-May 1994 Data

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Laboratory Locations
55 South Park Drive
Colchester, VT 05446

75 Green Mountain Drive
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150 Herman Melville Boulevard
New Bedford, MA 02740

Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220024
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 14 & 15 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP1-3, 04/30/94 at 0830 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	2
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.6
chloroform	0.5 U	acetone	2200
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5
trans-1,3-dichloropropene	0.5 U	2-hexanone	2J
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

The sample was diluted 100 fold to quantify acetone.

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	89

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220025
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 14 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP1-4, 04/30/94 at 0955 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	2
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.6
chloroform	0.5 U	acetone	1000
1,1-dichloroethene	0.5 U	2-butanone	2J
1,2-dichloropropane	0.5 U	carbon disulfide	0.3J
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	105

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220026
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 14 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP2-1, 05/01/94 at 0910 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	860
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	94

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220027
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 14 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP2-2, 05/01/94 at 1030 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	620
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	86

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220028
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 14 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP2-3, 05/01/94 at 1215 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	320
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	85

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220029
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 13 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP3-1, 05/02/94 at 1125 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.7	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	8	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	1
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	33
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	92

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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New Bedford, MA 02740

Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220030
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 13 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP3-2, 05/02/94 at 1245 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	1	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	8	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	1
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	110
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	98

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220031
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 14 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP3-3, 05/02/94 at 1345 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.9	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	13	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	2
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	89
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.3J
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 02 June 1994
Aquatec Lab No.: 220032
ETR No.: 43909; Project No.: 94000
Sample Received On: 04 May 1994; Analyzed On: 14 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP4-1, 05/03/94 at 1555 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	5 U	chloromethane	5 U
carbon tetrachloride	5 U	bromomethane	5 U
chlorobenzene	5 U	bromoform	5 U
1,2-dichloroethane	5 U	bromodichloromethane	5 U
1,1,1-trichloroethane	80	dibromochloromethane	5 U
1,1-dichloroethane	5 U	tetrachloroethene	5 U
1,1,2-trichloroethane	5 U	toluene	5 U
1,1,2,2-tetrachloroethane	5 U	trichloroethene	140
chloroethane	5 U	vinyl chloride	5 U
chloroform	5 U	acetone	120
1,1-dichloroethene	5 U	2-butanone	50 U
1,2-dichloropropane	5 U	carbon disulfide	5 U
trans-1,3-dichloropropene	5 U	2-hexanone	50 U
cis-1,3-dichloropropene	5 U	4-methyl-2-pentanone	50 U
ethylbenzene	5 U	styrene	5 U
methylene chloride	5 U	m & p-xylenes	10 U
cis-1,2-dichloroethene	5 U	o-xylene	5 U
trans-1,2-dichloroethene	5 U		

The sample was diluted 10 fold for analysis.

Summary of Surrogate Recoveries	% Rec
p-bromofluorobenzene	88

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 03 June 1994
Aquatec Lab No.: 220179
ETR No.: 43964; Project No.: 94000
Sample Received On: 05 May 1994; Analyzed On: 10 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP-4-2, 05/03/94 at 1800 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	2.0 U	chloromethane	2.0 U
carbon tetrachloride	2.0 U	bromomethane	2.0 U
chlorobenzene	2.0 U	bromoform	2.0 U
1,2-dichloroethane	2.0 U	bromodichloromethane	2.0 U
1,1,1-trichloroethane	33	dibromochloromethane	2.0 U
1,1-dichloroethane	2.0 U	tetrachloroethene	2.0 U
1,1,2-trichloroethane	2.0 U	toluene	2.0 U
1,1,2,2-tetrachloroethane	2.0 U	trichloroethene	44
chloroethane	2.0 U	vinyl chloride	2.0 U
chloroform	2.0 U	acetone	990
1,1-dichloroethene	2.0 U	2-butanone	20 U
1,2-dichloropropane	2.0 U	carbon disulfide	2.0 U
trans-1,3-dichloropropene	2.0 U	2-hexanone	20 U
cis-1,3-dichloropropene	2.0 U	4-methyl-2-pentanone	20 U
ethylbenzene	2.0 U	styrene	2.0 U
methylene chloride	2.0 U	m & p-xylenes	4.0 U
cis-1,2-dichloroethene	2.0 U	o-xylene	2.0 U
trans-1,2-dichloroethene	2.0 U		

The sample was diluted 4.0 fold for analysis.

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	110
p-bromofluorobenzene	107
1,2-dichlorobenzene-d_4	105

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 03 June 1994
Aquatec Lab No.: 220180
ETR No.: 43964; Project No.: 94000
Sample Received On: 05 May 1994; Analyzed On: 10, 11 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP-4-3, 05/04/94 at 0930 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	15	dibromochloromethane	0.5 U
1,1-dichloroethane	1.7	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	23
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	300
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	100
p-bromofluorobenzene	96
1,2-dichlorobenzene-d_4	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 03 June 1994
Aquatec Lab No.: 220181
ETR No.: 43964; Project No.: 94000
Sample Received On: 05 May 1994; Analyzed On: 10 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP-4-4, 05/04/94 at 1030 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.2J	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	9.5	dibromochloromethane	0.5 U
1,1-dichloroethane	0.9	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.2J
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	13
chloroethane	0.5 U	vinyl chloride	0.7
chloroform	0.5 U	acetone	50
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.3J	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	106
p-bromofluorobenzene	90
1,2-dichlorobenzene-d_4	97

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

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B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220447
ETR No.: 43989; Project No.: 94000
Sample Received On: 06 May 1994; Analyzed On: 12, 16 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., liquid sample labeled HP5-2, 05/05/94 at 1030 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	34	dibromochloromethane	0.5 U
1,1-dichloroethane	19	tetrachloroethene	26
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	31
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	360E
1,1-dichloroethene	0.4J	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.7
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	56	o-xylene	0.5 U
trans-1,2-dichloroethene	1.8		

The sample was diluted 8.3 fold to quantify cis-1,2-dichloroethene and acetone.

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	96
p-bromofluorobenzene	97
1,2-dichlorobenzene-d_4	101

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220448
ETR No.: 43989; Project No.: 94000
Sample Received On: 06 May 1994; Analyzed On: 12, 16 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., liquid sample labeled HP5-3, 05/05/94 at 1200 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	14	dibromochloromethane	0.5 U
1,1-dichloroethane	8.2	tetrachloroethene	8.1
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	10
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	480E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.6
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	27	o-xylene	0.5 U
trans-1,2-dichloroethene	0.8		

The sample was diluted 5.6 fold to quantify acetone.

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	100
p-bromofluorobenzene	96
1,2-dichlorobenzene-d_4	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220449
ETR No.: 43989; Project No.: 94000
Sample Received On: 06 May 1994; Analyzed On: 12 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., liquid sample labeled HP5-4, 05/05/94 at 1500 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	8.8	dibromochloromethane	0.5 U
1,1-dichloroethane	5.6	tetrachloroethene	3.9
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	5.0
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	240E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	18	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	103
p-bromofluorobenzene	96
1,2-dichlorobenzene-d_4	101

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220452
ETR No.: 43989; Project No.: 94000
Sample Received On: 06 May 1994; Analyzed On: 12 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., liquid sample labeled HP6-1, 05/05/94 at 1035 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	50 U	chloromethane	50 U
carbon tetrachloride	50 U	bromomethane	50 U
chlorobenzene	50 U	bromoform	50 U
1,2-dichloroethane	50 U	bromodichloromethane	50 U
1,1,1-trichloroethane	50 U	dibromochloromethane	50 U
1,1-dichloroethane	50 U	tetrachloroethene	50 U
1,1,2-trichloroethane	50 U	toluene	50 U
1,1,2,2-tetrachloroethane	50 U	trichloroethene	50 U
chloroethane	50 U	vinyl chloride	50 U
chloroform	50 U	acetone	5100E
1,1-dichloroethene	50 U	2-butanone	500 U
1,2-dichloropropane	50 U	carbon disulfide	50 U
trans-1,3-dichloropropene	50 U	2-hexanone	500 U
cis-1,3-dichloropropene	50 U	4-methyl-2-pentanone	500 U
ethylbenzene	50 U	styrene	50 U
methylene chloride	50 U	m & p-xylenes	100 U
cis-1,2-dichloroethene	50 U	o-xylene	50 U
trans-1,2-dichloroethene	50 U		

The sample was diluted 100 fold for analysis.

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	103
p-bromofluorobenzene	100
1,2-dichlorobenzene-d_4	96

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220453
ETR No.: 43989; Project No.: 94000
Sample Received On: 06 May 1994; Analyzed On: 12, 17 & 23 May 1994
Sample Identification: Metcalf & Eddy, Inc., liquid sample labeled HP6-2, 05/05/94 at 1425 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.7	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	28
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.3J
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	90
p-bromofluorobenzene	92
1,2-dichlorobenzene-d_4	90

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220454
ETR No.: 43989; Project No.: 94000
Sample Received On: 06 May 1994; Analyzed On: 12 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., liquid sample labeled HP6-3, 05/05/94 at 1655 hours.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.6	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.8	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	170E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	98
p-bromofluorobenzene	96
1,2-dichlorobenzene-d_4	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 03 June 1994
Aquatec Lab No.: 220608
ETR No.: 44012; Project No.: 94000
Sample Received On: 07 May 1994; Analyzed On: 12 & 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP6-4, 05/06/94.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	160E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	96
p-bromofluorobenzene	89
1,2-dichlorobenzene-d_4	116

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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150 Herman Melville Boulevard
New Bedford, MA 02740

Analytical Report

Date: 03 June 1994
Aquatec Lab No.: 220609
ETR No.: 44012; Project No.: 94000
Sample Received On: 07 May 1994; Analyzed On: 12, 16 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP7-1, 05/06/94.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	5.0 U	chloromethane	5.0 U
carbon tetrachloride	5.0 U	bromomethane	5.0 U
chlorobenzene	5.0 U	bromoform	5.0 U
1,2-dichloroethane	5.0 U	bromodichloromethane	5.0 U
1,1,1-trichloroethane	5.0 U	dibromochloromethane	5.0 U
1,1-dichloroethane	5.0 U	tetrachloroethene	5.0 U
1,1,2-trichloroethane	5.0 U	toluene	5.0 U
1,1,2,2-tetrachloroethane	5.0 U	trichloroethene	5.0 U
chloroethane	5.0 U	vinyl chloride	5.0 U
chloroform	5.0 U	acetone	860E
1,1-dichloroethene	5.0 U	2-butanone	50 U
1,2-dichloropropane	5.0 U	carbon disulfide	5.0 U
trans-1,3-dichloropropene	5.0 U	2-hexanone	50 U
cis-1,3-dichloropropene	5.0 U	4-methyl-2-pentanone	50 U
ethylbenzene	5.0 U	styrene	5.0 U
methylene chloride	5.0 U	m & p-xylenes	10 U
cis-1,2-dichloroethene	5.0 U	o-xylene	5.0 U
trans-1,2-dichloroethene	5.0 U		

The sample was diluted 10 fold for analysis.

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	102
p-bromofluorobenzene	101
1,2-dichlorobenzene-d_4	104

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 03 June 1994
Aquatec Lab No.: 220610
ETR No.: 44012; Project No.: 94000
Sample Received On: 07 May 1994; Analyzed On: 12, 16 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP-7-2, 05/06/94.

Volatile Organic Compounds in ug/l
EPA Method 524.2

benzene	5.0 U	chloromethane	5.0 U
carbon tetrachloride	5.0 U	bromomethane	5.0 U
chlorobenzene	5.0 U	bromoform	5.0 U
1,2-dichloroethane	5.0 U	bromodichloromethane	5.0 U
1,1,1-trichloroethane	5.0 U	dibromochloromethane	5.0 U
1,1-dichloroethane	5.0 U	tetrachloroethene	5.0 U
1,1,2-trichloroethane	5.0 U	toluene	5.0 U
1,1,2,2-tetrachloroethane	5.0 U	trichloroethene	5.0 U
chloroethane	5.0 U	vinyl chloride	5.0 U
chloroform	5.0 U	acetone	1300E
1,1-dichloroethene	5.0 U	2-butanone	50 U
1,2-dichloropropane	5.0 U	carbon disulfide	5.0 U
trans-1,3-dichloropropene	5.0 U	2-hexanone	50 U
cis-1,3-dichloropropene	5.0 U	4-methyl-2-pentanone	50 U
ethylbenzene	5.0 U	styrene	5.0 U
methylene chloride	5.0 U	m & p-xylenes	10 U
cis-1,2-dichloroethene	5.0 U	o-xylene	5.0 U
trans-1,2-dichloroethene	5.0 U		

The sample was diluted 10 fold for analysis.

Summary of Surrogate Recoveries

	% Rec
toluene-d_8	93
p-bromofluorobenzene	90
1,2-dichlorobenzene-d_4	108

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220752
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 15 & 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP8-1, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	5	chloromethane	1.2 U
carbon tetrachloride	1.2 U	bromomethane	1.2 U
chlorobenzene	1.2 U	bromoform	1.2 U
1,2-dichloroethane	1.2 U	bromodichloromethane	1.2 U
1,1,1-trichloroethane	50	dibromochloromethane	1.2 U
1,1-dichloroethane	1.2 U	tetrachloroethene	21
1,1,2-trichloroethane	1.2 U	toluene	1.2 U
1,1,2,2-tetrachloroethane	1.2 U	trichloroethene	27
chloroethane	1.2 U	vinyl chloride	1.2 U
chloroform	1.2 U	acetone	3600E
1,1-dichloroethene	1.2 U	2-butanone	12 U
1,2-dichloropropane	1.2 U	carbon disulfide	1.2 U
trans-1,3-dichloropropene	1.2 U	2-hexanone	12 U
cis-1,3-dichloropropene	1.2 U	4-methyl-2-pentanone	12 U
ethylbenzene	1.2 U	styrene	1.2 U
methylene chloride	1.2 U	m & p-xylenes	2.5 U
cis-1,2-dichloroethene	1.2 U	o-xylene	1.2 U
trans-1,2-dichloroethene	1.2 U		

The sample was diluted 2.5 fold for analysis.

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220753
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP8-2, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.6	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	53E	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	9
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	18
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	1500E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	99

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220754
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP8-3, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	1	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	34	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	5
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	11
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	900E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

The sample was diluted 1.7 fold to quantify 1,1,1-trichloroethane.

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	98

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220756
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP9-2, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	5.0 U
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	99

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220757
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP9-3, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	600E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	2	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	93

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220758
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 15 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP9-4, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	150E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.3J
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	94

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220759
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 & 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP10-1, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	45	dibromochloromethane	0.5 U
1,1-dichloroethane	3	tetrachloroethene	13
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	41
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	43
1,1-dichloroethene	0.5	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	73	o-xylene	0.5 U
trans-1,2-dichloroethene	2		

The sample was diluted 5 fold to quantify cis-1,2-dichloroethene, trichloroethene and 1,1,1-trichloroethene.

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	99

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220762
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP-10-2, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	17	dibromochloromethane	0.5 U
1,1-dichloroethane	1	tetrachloroethene	5
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	12
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	48E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	24	o-xylene	0.5 U
trans-1,2-dichloroethene	1		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220763
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP-10-3, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	12	dibromochloromethane	0.5 U
1,1-dichloroethane	2	tetrachloroethene	3
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	9
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	8
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	19	o-xylene	0.5 U
trans-1,2-dichloroethene	0.8		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	101

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

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Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220764
ETR No.: 44033; Project No.: 94000
Sample Received On: 10 May 1994; Analyzed On: 16 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP-10-4, 05/09/94.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.3J	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	7	dibromochloromethane	0.5 U
1,1-dichloroethane	1	tetrachloroethene	2
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	6
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	160
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	12	o-xylene	0.5 U
trans-1,2-dichloroethene	0.4J		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

Inchcape Testing Services
Aquatec Laboratories

Laboratory Locations
55 South Park Drive
Colchester, VT 05446

75 Green Mountain Drive
South Burlington, VT 05403

150 Herman Melville Boulevard
New Bedford, MA 02740

Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220916
ETR No.: 44063; Project No.: 94000
Sample Received On: 12 May 1994; Analyzed On: 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP11-1, 05/10/94 at 1100 hours.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	0.5 U	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	0.5 U
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	0.5 U
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	5.0 U
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	0.5 U	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	91

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

Inchcape Testing Services
Aquatec Laboratories

Laboratory Locations
55 South Park Drive
Colchester, VT 05446

75 Green Mountain Drive
South Burlington, VT 05403

150 Herman Melville Boulevard
New Bedford, MA 02740

Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220917
ETR No.: 44063; *Project No.*: 94000
Sample Received On: 12 May 1994; Analyzed On: 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP11-2, 05/10/94 at 1225 hours.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	1 U	chloromethane	1 U
carbon tetrachloride	1 U	bromomethane	1 U
chlorobenzene	1 U	bromoform	1 U
1,2-dichloroethane	1 U	bromodichloromethane	1 U
1,1,1-trichloroethane	40	dibromochloromethane	1 U
1,1-dichloroethane	2	tetrachloroethene	17
1,1,2-trichloroethane	1 U	toluene	1 U
1,1,2,2-tetrachloroethane	1 U	trichloroethene	47
chloroethane	1 U	vinyl chloride	1 U
chloroform	1 U	acetone	140E
1,1-dichloroethene	1 U	2-butanone	10 U
1,2-dichloropropane	1 U	carbon disulfide	1 U
trans-1,3-dichloropropene	1 U	2-hexanone	10 U
cis-1,3-dichloropropene	1 U	4-methyl-2-pentanone	10 U
ethylbenzene	1 U	styrene	1 U
methylene chloride	1 U	m & p-xylenes	2 U
cis-1,2-dichloroethene	9	o-xylene	1 U
trans-1,2-dichloroethene	1 U		

The sample was diluted 2.0 fold for analysis.

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	100

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

Inchcape Testing Services
Aquatec Laboratories

Laboratory Locations
55 South Park Drive
Colchester, VT 05446

75 Green Mountain Drive
South Burlington, VT 05403

150 Herman Melville Boulevard
New Bedford, MA 02740

Analytical Report

Date: 01 June 1994
Aquatec Lab No.: 220918
ETR No.: 44063; Project No.: 94000
Sample Received On: 12 May 1994; Analyzed On: 17 May 1994
Sample Identification: Metcalf & Eddy, Inc., water sample labeled HP11-3, 05/10/94 at 1410 hours.

Volatile Organic Compounds in ug/l
EPA Method OLC

benzene	0.5 U	chloromethane	0.5 U
carbon tetrachloride	0.5 U	bromomethane	0.5 U
chlorobenzene	0.5 U	bromoform	0.5 U
1,2-dichloroethane	0.5 U	bromodichloromethane	0.5 U
1,1,1-trichloroethane	21	dibromochloromethane	0.5 U
1,1-dichloroethane	0.5 U	tetrachloroethene	9
1,1,2-trichloroethane	0.5 U	toluene	0.5 U
1,1,2,2-tetrachloroethane	0.5 U	trichloroethene	24
chloroethane	0.5 U	vinyl chloride	0.5 U
chloroform	0.5 U	acetone	73E
1,1-dichloroethene	0.5 U	2-butanone	5.0 U
1,2-dichloropropane	0.5 U	carbon disulfide	0.5 U
trans-1,3-dichloropropene	0.5 U	2-hexanone	5.0 U
cis-1,3-dichloropropene	0.5 U	4-methyl-2-pentanone	5.0 U
ethylbenzene	0.5 U	styrene	0.5 U
methylene chloride	0.5 U	m & p-xylenes	1.0 U
cis-1,2-dichloroethene	5	o-xylene	0.5 U
trans-1,2-dichloroethene	0.5 U		

Summary of Surrogate Recoveries

	% Rec
p-bromofluorobenzene	93

Key to the letters used to qualify the results of the analysis:

U - The compound was analyzed for but not detected. The number is the method specified reporting limit.

J - The mass spectrum indicates the presence of the compound, but the calculated result is less than the method specified reporting limit.

B - The compound was present in the method blank. The result reported here is not blank corrected.

E - Estimated compound concentration reported from response exceeding standard calibration range.

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY
DESCRIPTION HP 12-1 GROUNDWATER
PROJECT NUMBER L11859
SAMPLE NO. 4165-94
GC/MS FILE >V9096::QC

DATE COLLECTED 05/14/94
DATE RECEIVED 05/16/94
DATE ANALYZED 05/17/94 2:15
OPERATOR DS/JN
CERTIFICATION NO. 4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 12-1 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/17/94 2:15
SAMPLE NO.	4165-94	OPERATOR	DS/JN
GC/MS FILE	>V9096::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 12-2 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/17/94 1:28
SAMPLE NO.	4164-94	OPERATOR	DS/JN
GC/MS FILE	>V9095::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 12-2 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/17/94 1:28
SAMPLE NO.	4164-94	OPERATOR	DS/JN
GC/MS FILE	>V9095::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP12-3 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/16/94 22:17
SAMPLE NO.	4160-94	OPERATOR	JN
GC/MS FILE	>V9091::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY
DESCRIPTION HP12-3 GROUNDWATER
PROJECT NUMBER L11859
SAMPLE NO. 4160-94
GC/MS FILE >V9091::QC

DATE COLLECTED 05/14/94
DATE RECEIVED 05/16/94
DATE ANALYZED 05/16/94 22:17
OPERATOR JN
CERTIFICATION NO. 4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY
DESCRIPTION HP 12-4 GROUNDWATER
PROJECT NUMBER L11859
SAMPLE NO. 4162-94
GC/MS FILE >V9093::QC

DATE COLLECTED 05/14/94
DATE RECEIVED 05/16/94
DATE ANALYZED 05/16/94 23:52
OPERATOR JN
CERTIFICATION NO. 4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 12-4 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/16/94 23:52
SAMPLE NO.	4162-94	OPERATOR	JN
GC/MS FILE	>V9093::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY
DESCRIPTION HP 13-1 GROUNDWATER
PROJECT NUMBER L11859
SAMPLE NO. 4166-94
GC/MS FILE >V9090::QC

DATE COLLECTED 05/14/94
DATE RECEIVED 05/16/94
DATE ANALYZED 05/16/94 21:30
OPERATOR JN
CERTIFICATION NO. 4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 13-1 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/16/94 21:30
SAMPLE NO.	4166-94	OPERATOR	JN
GC/MS FILE	>V9090::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 13-2 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/17/94 0:41
SAMPLE NO.	4163-94	OPERATOR	DS/JN
GC/MS FILE	>V9094::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 13-2 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/17/94 0:41
SAMPLE NO.	4163-94	OPERATOR	DS/JN
GC/MS FILE	>V9094::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY	DATE COLLECTED 05/14/94
DESCRIPTION HP 13-3 GROUNDWATER	DATE RECEIVED 05/16/94
PROJECT NUMBER L11859	DATE ANALYZED 05/16/94 23:03
SAMPLE NO. 4161-94	OPERATOR JN
GC/MS FILE >V9092::QC	CERTIFICATION NO. 4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY		DATE COLLECTED	05/14/94
DESCRIPTION	HP 13-3 GROUNDWATER	DATE RECEIVED	05/16/94
PROJECT NUMBER	L11859	DATE ANALYZED	05/16/94 23:03
SAMPLE NO.	4161-94	OPERATOR	JN
GC/MS FILE	>V9092::QC	CERTIFICATION NO.	4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY
DESCRIPTION HP-14-60 14:15
PROJECT NUMBER L11859
SAMPLE NO. 4300-94
GC/MS FILE >V9163::QC

DATE COLLECTED 05/19/94
DATE RECEIVED 05/19/94
DATE ANALYZED 05/20/94 0:29
OPERATOR DS/JN
CERTIFICATION NO. 4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
Acetone	67-64-1	9.0 *
Benzene	71-43-2	< 0.50
Bromobenzene	108-86-1	< 0.50
Bromochloromethane	74-97-5	< 0.50
Bromodichloromethane	75-27-4	< 0.50
Bromoform	75-25-2	< 0.50
Bromomethane	74-83-9	< 0.50
n-Butylbenzene	104-51-8	< 0.50
sec-Butylbenzene	135-98-8	< 0.50
t-Butylbenzene	98-06-6	< 0.50
Carbon Tetrachloride	56-23-5	< 0.50
Chlorobenzene	108-90-7	< 0.50
Chloroethane	75-00-3	< 0.50
Chloroform	67-66-3	< 0.50
Chloromethane	74-87-3	< 0.50
2-Chlorotoluene	95-49-8	< 0.50
4-Chlorotoluene	106-43-4	< 0.50
Dibromochloromethane	124-48-1	< 0.50
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.50
1,2-Dibromoethane	106-93-4	< 0.50
Dibromomethane	74-95-3	< 0.50
1,2-Dichlorobenzene	95-50-1	< 0.50
1,3-Dichlorobenzene	541-73-1	< 0.50
1,4-Dichlorobenzene	106-46-7	< 0.50
Dichlorodifluoromethane	75-71-8	< 0.50
1,1-Dichloroethane	75-35-3	< 0.50
1,2-Dichloroethane	107-06-2	< 0.50
1,1-Dichloroethene	75-35-4	< 0.50
cis-1,2-Dichloroethene	156-59-4	< 0.50
trans-1,2-Dichloroethene	156-60-5	< 0.50
1,2-Dichloropropane	78-87-5	< 0.50
cis-1,3-Dichloropropene	10061-01-5	< 0.50
trans-1,3-Dichloropropene	10061-02-6	< 0.50
1,3-Dichloropropane	142-28-9	< 0.50

CONTINUED

ATTACHMENT
BURGESS & NIPLE, LIMITED
ANALYSIS REPORT

METCALF & EDDY
DESCRIPTION HP-14-60 14:15
PROJECT NUMBER L11859
SAMPLE NO. 4300-94
GC/MS FILE >V9163::QC

DATE COLLECTED 05/19/94
DATE RECEIVED 05/19/94
DATE ANALYZED 05/20/94 0:29
OPERATOR DS/JN
CERTIFICATION NO. 4032

EPA METHOD 524.2: VOLATILE ORGANIC COMPOUNDS

COMPOUND NAME	CAS NUMBER	UG/L
2,2-Dichloropropane	590-20-7	< 0.50
1,1-Dichloropropene	563-58-6	< 0.50
Ethyl benzene	100-41-4	< 0.50
Hexachlorobutadiene	87-68-3	< 0.50
Isopropyl Benzene	98-82-8	< 0.50
p-Isopropyltoluene	99-87-6	< 0.50
Methylene Chloride	75-09-2	< 0.50
Naphthalene	91-20-3	< 0.50
n-Propylbenzene	103-65-1	< 0.50
Styrene	100-42-5	< 0.50
1,1,1,2-Tetrachloroethane	630-20-6	< 0.50
1,1,2,2-Tetrachloroethane	79-34-5	< 0.50
Tetrachloroethene	127-18-4	< 0.50
Toluene	108-88-3	< 0.50
1,2,3-Trichlorobenzene	87-61-6	< 0.50
1,2,4-Trichlorobenzene	120-82-1	< 0.50
1,1,1-Trichloroethane	71-55-6	< 0.50
1,1,2-Trichloroethane	79-00-5	< 0.50
Trichloroethene	79-01-6	< 0.50
Trichlorofluoromethane	75-69-4	< 0.50
1,2,3-Trichloropropane	96-18-4	< 0.50
1,2,4-Trimethylbenzene	95-63-6	< 0.50
1,3,5-Trimethylbenzene	108-67-8	< 0.50
Vinyl Chloride	75-01-4	< 0.50
Xylenes, total	1330-20-7	< 0.50

* CLIENT HAS REQUESTED THAT ACETONE BE CALIBRATED FOR AND ADDED TO THE LIST OF ANALYTES.

1LCA
LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HP13

Lab Name: AQUATEC, INC.   Contract: 94000

Lab Code: AQUAI   Case No.: 44396   SAS No.:   SDG No.: 44396

Lab Sample ID: 222400   Date Received: 05/27/94

Lab File ID: L222400I2V.D   Date Analyzed: 06/01/94

Purge Volume: 5.0 (mL)   Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	2	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U

1LCA
LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HP14

Lab Name: AQUATEC, INC.   Contract: 94000

Lab Code: AQUAI   Case No.: 44396   SAS No.:   SDG No.: 44396

Lab Sample ID: 222402   Date Received: 05/27/94

Lab File ID: L222402V.D   Date Analyzed: 05/31/94

Purge Volume: 5.0 (mL)   Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	2	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	0.5	J
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U

1LCA
LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HP15

Lab Name: AQUATEC, INC. Contract: 94000

Lab Code: AQUAI Case No.: 44396 SAS No.: SDG No.: 44396

Lab Sample ID: 222404 Date Received: 05/27/94

Lab File ID: L222404V.D Date Analyzed: 05/31/94

Purge Volume: 5.0 (mL) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene Chloride	2	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylene (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U

APPENDIX A.1.2

GROUNDWATER DATA

1996 Data

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW1-AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300742

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300742DV.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ________   Data Analyzed: 05/20/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 10.0

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	-50	U
75-35-4	1,1-Dichloroethene	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
75-15-0	Carbon Disulfide	5	U
75-09-2	Methylene Chloride	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
78-93-3	2-Butanone	-50	U
67-66-3	Chloroform	5	U
71-55-6	1,1,1-Trichloroethane	-450	E
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	-230	
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
108-10-1	4-Methyl-2-Pentanone	-50	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
591-78-6	2-Hexanone	-50	U
127-18-4	Tetrachloroethene	-74	
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
1330-20-7	Xylene (total)	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW1-AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300742

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300742DV.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/20/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 10.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane	5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW1-ANDL

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300742D1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300742D2V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ______ Data Analyzed: 05/22/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 20.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
67-64-1	Acetone	100	U
75-35-4	1,1-Dichloroethene	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	100	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	450	D
56-23-5	Carbon Tetrachloride	10	U
107-06-2	1,2-Dichloroethane	10	U
71-43-2	Benzene	10	U
79-01-6	Trichloroethene	230	D
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
108-10-1	4-Methyl-2-Pentanone	100	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
591-78-6	2-Hexanone	100	U
127-18-4	Tetrachloroethene	77	D
124-48-1	Dibromochloromethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW1-ANDL

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300742D1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300742D2V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/22/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 20.0

Soil Extract Volume: ________(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	10	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWLAN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300611

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L30061112V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ______ Data Analyzed: 05/22/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	1	
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

[illegible]

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW1AN96

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300611

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300611I2V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ______   Data Analyzed: 05/22/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW1AN96DL

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300611D1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300611DV.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ________ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume: ________(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1	U
75-01-4	Vinyl Chloride	1	U
74-83-9	Bromomethane	1	U
75-00-3	Chloroethane	1	U
67-64-1	Acetone	10	U
75-35-4	1,1-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
75-15-0	Carbon Disulfide	1	U
75-09-2	Methylene Chloride	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
78-93-3	2-Butanone	7	JD
67-66-3	Chloroform	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
107-06-2	1,2-Dichloroethane	1	U
71-43-2	Benzene	1	U
79-01-6	Trichloroethene	1	U
78-87-5	1,2-Dichloropropane	1	U
75-27-4	Bromodichloromethane	1	U
108-10-1	4-Methyl-2-Pentanone	10	U
10061-01-5	cis-1,3-Dichloropropene	1	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
79-00-5	1,1,2-Trichloroethane	1	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	1	U
124-48-1	Dibromochloromethane	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (total)	1	U
100-42-5	Styrene	1	U
75-25-2	Bromoform	1	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW1AN96DL

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300611D1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300611DV.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ______ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	1	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW2AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300595

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300595V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/14/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW2AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300595

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300595V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/14/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW2DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300589

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300589DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 34.5

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	17	U
75-01-4	Vinyl Chloride	17	U
74-83-9	Bromomethane	17	U
75-00-3	Chloroethane	17	U
67-64-1	Acetone	-170	U
75-35-4	1,1-Dichloroethene	17	U
156-60-5	trans-1,2-Dichloroethene	17	U
75-15-0	Carbon Disulfide	17	U
75-09-2	Methylene Chloride	17	U
75-34-3	1,1-Dichloroethane	17	U
156-59-2	cis-1,2-Dichloroethene	-250	
78-93-3	2-Butanone	-170	U
67-66-3	Chloroform	17	U
71-55-6	1,1,1-Trichloroethane	-350	
56-23-5	Carbon Tetrachloride	17	U
107-06-2	1,2-Dichloroethane	17	U
71-43-2	Benzene	17	U
79-01-6	Trichloroethene	-590	
78-87-5	1,2-Dichloropropane	17	U
75-27-4	Bromodichloromethane	17	U
108-10-1	4-Methyl-2-Pentanone	-170	U
10061-01-5	cis-1,3-Dichloropropene	17	U
108-88-3	Toluene	17	U
10061-02-6	trans-1,3-Dichloropropene	17	U
79-00-5	1,1,2-Trichloroethane	17	U
591-78-6	2-Hexanone	-170	U
127-18-4	Tetrachloroethene	-430	
124-48-1	Dibromochloromethane	17	U
108-90-7	Chlorobenzene	17	U
100-41-4	Ethylbenzene	17	U
1330-20-7	Xylene (total)	17	U
100-42-5	Styrene	17	U
75-25-2	Bromoform	17	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW2DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300589

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300589DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 34.5

Soil Extract Volume: ________(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	17	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300734

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300734V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ________   Data Analyzed: 05/18/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: _______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	1	
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	1	
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.8	
79-01-6	Trichloroethene	4	
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	3	
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	5	
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.9	
100-41-4	Ethylbenzene	0.5	
1330-20-7	Xylene (total)	2	
100-42-5	Styrene	0.9	
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300734

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300734V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/18/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane	1	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3ANRE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300734R1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300734I2V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. _______ Data Analyzed: 05/20/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3ANRE

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300734R1

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300734I2V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ________   Data Analyzed: 05/20/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: _______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300735

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300735V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.6	
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.4	J
79-01-6	Trichloroethene	2	
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	2	
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	2	
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.7	
100-42-5	Styrene	0.4	J
75-25-2	Bromoform	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300735

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300735V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ______ Data Analyzed: 05/18/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3DANRE

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300735R1

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300735I2V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ______   Data Analyzed: 05/21/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	3	~~U~~
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW3DANRE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300735R1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300735I2V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/21/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300738

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300738V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ______ Data Analyzed: 05/20/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300738

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300738V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ______ Data Analyzed: 05/20/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300584

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300584DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/14/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 16.7

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	-11	
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
67-64-1	Acetone	-84	U
75-35-4	1,1-Dichloroethene	8	U
156-60-5	trans-1,2-Dichloroethene	8	U
75-15-0	Carbon Disulfide	8	U
75-09-2	Methylene Chloride	8	U
75-34-3	1,1-Dichloroethane	-27	
156-59-2	cis-1,2-Dichloroethene	-150	
78-93-3	2-Butanone	-84	U
67-66-3	Chloroform	8	U
71-55-6	1,1,1-Trichloroethane	-110	
56-23-5	Carbon Tetrachloride	8	U
107-06-2	1,2-Dichloroethane	8	U
71-43-2	Benzene	8	U
79-01-6	Trichloroethene	-280	
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
108-10-1	4-Methyl-2-Pentanone	-84	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-88-3	Toluene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
591-78-6	2-Hexanone	-84	U
127-18-4	Tetrachloroethene	-110	
124-48-1	Dibromochloromethane	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
1330-20-7	Xylene (total)	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300584

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300584DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/14/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 16.7

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	8	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DANRE

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300584R1

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300584D3V.D

Level: (low/med) LOW   Date Received: 05/09/96

% Moisture: not dec. ______   Data Analyzed: 05/23/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 12.5

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	11	
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
67-64-1	Acetone	62	U
75-35-4	1,1-Dichloroethene	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
75-15-0	Carbon Disulfide	6	U
75-09-2	Methylene Chloride	6	U
75-34-3	1,1-Dichloroethane	25	
156-59-2	cis-1,2-Dichloroethene	150	
78-93-3	2-Butanone	62	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	110	
56-23-5	Carbon Tetrachloride	6	U
107-06-2	1,2-Dichloroethane	6	U
71-43-2	Benzene	6	U
79-01-6	Trichloroethene	280	
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
108-10-1	4-Methyl-2-Pentanone	62	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
591-78-6	2-Hexanone	62	U
127-18-4	Tetrachloroethene	100	
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DANRE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300584R1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300584D3V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/23/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 12.5

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	6	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DANB

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300585

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300585DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/14/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 14.7

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	11	
74-83-9	Bromomethane	7	U
75-00-3	Chloroethane	7	U
67-64-1	Acetone	74	U
75-35-4	1,1-Dichloroethene	7	U
156-60-5	trans-1,2-Dichloroethene	7	U
75-15-0	Carbon Disulfide	7	U
75-09-2	Methylene Chloride	7	U
75-34-3	1,1-Dichloroethane	28	
156-59-2	cis-1,2-Dichloroethene	140	
78-93-3	2-Butanone	74	U
67-66-3	Chloroform	7	U
71-55-6	1,1,1-Trichloroethane	130	
56-23-5	Carbon Tetrachloride	7	U
107-06-2	1,2-Dichloroethane	7	U
71-43-2	Benzene	7	U
79-01-6	Trichloroethene	320	
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
108-10-1	4-Methyl-2-Pentanone	74	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-88-3	Toluene	17	
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
591-78-6	2-Hexanone	74	U
127-18-4	Tetrachloroethene	110	
124-48-1	Dibromochloromethane	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
1330-20-7	Xylene (total)	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DANB

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300585

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300585DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/14/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 14.7

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	7	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4D2AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300586

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300586I2V.D

Level: (low/med) LOW   Date Received: 05/09/96

% Moisture: not dec. ________   Data Analyzed: 05/15/96

GC Column: CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	5	
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4D2AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300586

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300586I2V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5-AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300740

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300740V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/20/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	- 5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	- 5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	-0.7	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	- 5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5 ~~0.3~~	J
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	- 5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5-AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300740

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300740V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/20/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5-ANB

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300741

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300741V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ______ Data Analyzed: 05/20/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	- 5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	- 5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	-0.8	
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	- 5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	- 5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5-ANB

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300741

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300741V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ______   Data Analyzed: 05/20/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300613

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300613V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ________ Data Analyzed: 05/16/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300613

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300613V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ______ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5AN96B

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300614

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300614V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ________   Data Analyzed: 05/16/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: _______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5AN96B

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300614

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300614V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ______ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300591

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300591DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 20.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
67-64-1	Acetone	- 100	U
75-35-4	1,1-Dichloroethene	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
75-15-0	Carbon Disulfide	10	U
75-09-2	Methylene Chloride	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	- 100	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	- 380	
56-23-5	Carbon Tetrachloride	10	U
107-06-2	1,2-Dichloroethane	10	U
71-43-2	Benzene	10	U
79-01-6	Trichloroethene	- 78	
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
108-10-1	4-Methyl-2-Pentanone	-100	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
591-78-6	2-Hexanone	- 100	U
127-18-4	Tetrachloroethene	10	U
124-48-1	Dibromochloromethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300591

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300591DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 20.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300612

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300612V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ________ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6AN96

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300612

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300612V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ________   Data Analyzed: 05/16/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: _______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6-DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300865

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300865V.D

Level: (low/med) LOW Date Received: 05/15/96

% Moisture: not dec. ______ Data Analyzed: 05/21/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.4	J
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6-DAN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300865

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300865V.D

Level: (low/med) LOW   Date Received: 05/15/96

% Moisture: not dec. ______   Data Analyzed: 05/21/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300736

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300736V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ________   Data Analyzed: 05/18/96

GC Column: CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.4	J
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	1	
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	2	
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300736

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300736V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ______ Data Analyzed: 05/18/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7ANRE

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300736R1

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300736I2V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ________   Data Analyzed: 05/21/96

GC Column: CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	1	[illegible]
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7ANRE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300736R1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300736I2V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/21/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7-AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300744

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300744V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ________   Data Analyzed: 05/20/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5 ~~0.3~~	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7-AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300744

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300744V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/20/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300594

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300594I2V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	5	
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW7DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300594

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300594I2V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW8AN96

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300609

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300609V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ________   Data Analyzed: 05/16/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: _______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW8AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300609

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300609V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ______ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-8AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300610

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300610D2V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ________ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 2.6

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1	U
75-01-4	Vinyl Chloride	1	U
74-83-9	Bromomethane	1	U
75-00-3	Chloroethane	1	U
67-64-1	Acetone	13	U
75-35-4	1,1-Dichloroethene	5	
156-60-5	trans-1,2-Dichloroethene	4	
75-15-0	Carbon Disulfide	1	U
75-09-2	Methylene Chloride	1	U
75-34-3	1,1-Dichloroethane	3	
156-59-2	cis-1,2-Dichloroethene	48	
78-93-3	2-Butanone	14	
67-66-3	Chloroform	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon Tetrachloride	1	U
107-06-2	1,2-Dichloroethane	1	U
71-43-2	Benzene	1	U
79-01-6	Trichloroethene	1	U
78-87-5	1,2-Dichloropropane	1	U
75-27-4	Bromodichloromethane	1	U
108-10-1	4-Methyl-2-Pentanone	13	U
10061-01-5	cis-1,3-Dichloropropene	1	U
108-88-3	Toluene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
79-00-5	1,1,2-Trichloroethane	1	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	1	U
124-48-1	Dibromochloromethane	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
1330-20-7	Xylene (total)	1	U
100-42-5	Styrene	1	U
75-25-2	Bromoform	1	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-8AN96

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300610

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300610D2V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ______   Data Analyzed: 05/16/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 2.6

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW8-DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300864

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300864V.D

Level: (low/med) LOW Date Received: 05/15/96

% Moisture: not dec. ________ Data Analyzed: 05/21/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________(uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW8-DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300864

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300864V.D

Level: (low/med) LOW Date Received: 05/15/96

% Moisture: not dec. ________ Data Analyzed: 05/21/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW9AN96

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300605

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300605V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ________   Data Analyzed: 05/16/96

GC Column: CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ________(uL)   Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW9AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300605

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300605V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. _______ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW10AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300607

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300607V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ________ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW10AN96

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300607

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300607V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ________   Data Analyzed: 05/16/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: _______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW11AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300739

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300739V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/20/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	4	[illegible]
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW11AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300739

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300739V.D

Level: (low/med) LOW   Date Received: 05/14/96

% Moisture: not dec. ______   Data Analyzed: 05/20/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW11ANRE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300739R1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300739I2V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ________ Data Analyzed: 05/22/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	3	[illegible]
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	3	[illegible]
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW11ANRE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS NO.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300739R1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300739I2V.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: not dec. ______ Data Analyzed: 05/22/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: ______(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane___	0.5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW12AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300588

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300588V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/14/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW12AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300588

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300588V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/14/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW13AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300582

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300582V.D

Level: (low/med) LOW   Date Received: 05/09/96

% Moisture: not dec. ______   Data Analyzed: 05/14/96

GC Column: CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW13AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300582

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300582V.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ______ Data Analyzed: 05/14/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW14AN96

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300608

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300608V.D

Level: (low/med) LOW Date Received: 05/10/96

% Moisture: not dec. ________ Data Analyzed: 05/16/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.5	U
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0.5	U
75-00-3	Chloroethane	0.5	U
67-64-1	Acetone	5	U
75-35-4	1,1-Dichloroethene	0.5	U
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	U
75-09-2	Methylene Chloride	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
156-59-2	cis-1,2-Dichloroethene	0.5	U
78-93-3	2-Butanone	5	U
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	U
56-23-5	Carbon Tetrachloride	0.5	U
107-06-2	1,2-Dichloroethane	0.5	U
71-43-2	Benzene	0.5	U
79-01-6	Trichloroethene	0.5	U
78-87-5	1,2-Dichloropropane	0.5	U
75-27-4	Bromodichloromethane	0.5	U
108-10-1	4-Methyl-2-Pentanone	5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
79-00-5	1,1,2-Trichloroethane	0.5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.5	U
124-48-1	Dibromochloromethane	0.5	U
108-90-7	Chlorobenzene	0.5	U
100-41-4	Ethylbenzene	0.5	U
1330-20-7	Xylene (total)	0.5	U
100-42-5	Styrene	0.5	U
75-25-2	Bromoform	0.5	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW14AN96

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300608

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300608V.D

Level: (low/med) LOW   Date Received: 05/10/96

% Moisture: not dec. ________   Data Analyzed: 05/16/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: _______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWP1AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300587

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: L300587DV.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: not dec. ________ Data Analyzed: 05/15/96

GC Column:CAP ID: 0.53 (mm) Dilution Factor: 76.9

Soil Extract Volume: _______(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	38	U
75-01-4	Vinyl Chloride	38	U
74-83-9	Bromomethane	38	U
75-00-3	Chloroethane	38	U
67-64-1	Acetone	380	U
75-35-4	1,1-Dichloroethene	38	U
156-60-5	trans-1,2-Dichloroethene	38	U
75-15-0	Carbon Disulfide	38	U
75-09-2	Methylene Chloride	38	U
75-34-3	1,1-Dichloroethane	38	U
156-59-2	cis-1,2-Dichloroethene	38	U
78-93-3	2-Butanone	380	U
67-66-3	Chloroform	38	U
71-55-6	1,1,1-Trichloroethane	720	
56-23-5	Carbon Tetrachloride	38	U
107-06-2	1,2-Dichloroethane	38	U
71-43-2	Benzene	38	U
79-01-6	Trichloroethene	1400	
78-87-5	1,2-Dichloropropane	38	U
75-27-4	Bromodichloromethane	38	U
108-10-1	4-Methyl-2-Pentanone	380	U
10061-01-5	cis-1,3-Dichloropropene	38	U
108-88-3	Toluene	38	U
10061-02-6	trans-1,3-Dichloropropene	38	U
79-00-5	1,1,2-Trichloroethane	38	U
591-78-6	2-Hexanone	380	U
127-18-4	Tetrachloroethene	540	
124-48-1	Dibromochloromethane	38	U
108-90-7	Chlorobenzene	38	U
100-41-4	Ethylbenzene	38	U
1330-20-7	Xylene (total)	38	U
100-42-5	Styrene	38	U
75-25-2	Bromoform	38	U

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWP1AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300587

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: L300587DV.D

Level: (low/med) LOW   Date Received: 05/09/96

% Moisture: not dec. ________   Data Analyzed: 05/15/96

GC Column:CAP   ID: 0.53 (mm)   Dilution Factor: 76.9

Soil Extract Volume: ______(uL)   Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-34-5	---------1,1,2,2-Tetrachloroethane	38	U

FORM I VOA-2

3/90

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-1AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300742

Sample wt/vol: 990 (g/mL) ML Lab File ID: R300742S.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/16/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/20/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300742

Sample wt/vol: 990 (g/mL) ML Lab File ID: R300742S.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/16/96

Concentrated Extract Volume: 1000 (UL) Date Analyzed: 05/20/96

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW2DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300589

Sample wt/vol: 1000 (g/mL) ML Lab File ID: U300589S.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/13/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/18/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW2DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300589

Sample wt/vol: 1000 (g/mL) ML Lab File ID: U300589S.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/13/96

Concentrated Extract Volume: 1000 (UL) Date Analyzed: 05/18/96

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300584

Sample wt/vol: 1000 (g/mL) ML Lab File ID: U300584S.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted:05/13/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/18/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300584

Sample wt/vol: 1000 (g/mL) ML Lab File ID: U300584S.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/13/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/18/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4D2AN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58394

Matrix: (soil/water) WATER   Lab Sample ID: 300586

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: U300586S.D

Level: (low/med) LOW   Date Received: 05/09/96

% Moisture: ______ decanted: (Y/N)___   Date Extracted:05/13/96

Concentrated Extract Volume: 1000(UL)   Date Analyzed: 05/18/96

Injection Volume: 2.0(uL)   Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y   pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4D2AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300586

Sample wt/vol: 1000 (g/mL) ML Lab File ID: U300586S.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/13/96

Concentrated Extract Volume: 1000 (UL) Date Analyzed: 05/18/96

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300740

Sample wt/vol: 990 (g/mL) ML Lab File ID: R300740S.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/16/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/20/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300740

Sample wt/vol: 990 (g/mL) ML Lab File ID: R300740S.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/16/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/20/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5ANB

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300741

Sample wt/vol: 995 (g/mL) ML Lab File ID: R300741S.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/16/96

Concentrated Extract Volume: 1000 (UL) Date Analyzed: 05/20/96

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5ANB

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300741

Sample wt/vol: 995 (g/mL) ML Lab File ID: R300741S.D

Level: (low/med) LOW Date Received: 05/14/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted:05/16/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/20/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300591

Sample wt/vol: 1000 (g/mL) ML Lab File ID: U300591S.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: ____ decanted: (Y/N)___ Date Extracted: 05/13/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/18/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW6AN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58394

Matrix: (soil/water) WATER Lab Sample ID: 300591

Sample wt/vol: 1000 (g/mL) ML Lab File ID: U300591S.D

Level: (low/med) LOW Date Received: 05/09/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/13/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/18/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300865

Sample wt/vol: 990 (g/mL) ML Lab File ID: R300865S.D

Level: (low/med) LOW Date Received: 05/15/96

% Moisture: ______ decanted: (Y/N) ___ Date Extracted: 05/16/96

Concentrated Extract Volume: 1000 (UL) Date Analyzed: 05/21/96

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 300865

Sample wt/vol: 990 (g/mL) ML Lab File ID: R300865S.D

Level: (low/med) LOW Date Received: 05/15/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted:05/16/96

Concentrated Extract Volume: 1000(UL) Date Analyzed: 05/21/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-8DAN

Lab Name: INCHCAPE ENVIRONMENTAL   Contract: 96210

Lab Code: INCHVT   Case No.: 96210   SAS No.:   SDG No.: 58427

Matrix: (soil/water) WATER   Lab Sample ID: 300864

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: R300864S.D

Level: (low/med) LOW   Date Received: 05/15/96

% Moisture: ______ decanted: (Y/N)___   Date Extracted: 05/16/96

Concentrated Extract Volume: 1000(UL)   Date Analyzed: 05/21/96

Injection Volume: 2.0(uL)   Dilution Factor: 1.0

GPC Cleanup: (Y/N) N   pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-8DAN

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 96210

Lab Code: INCHVT Case No.: 96210 SAS No.: SDG No.: 58427

Matrix: (soil/water) WATER Lab Sample ID: 30C864

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R3C0864S.D

Level: (low/med) LOW Date Received: 05/15/96

% Moisture: ______ decanted: (Y/N)___ Date Extracted: 05/16/96

Concentrated Extract Volume: 1000 (UL) Date Analyzed: 05/21/96

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW-1AN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58427_

Matrix (soil/water): WATER Lab Sample ID: 300742

Level (low/med): LOW__ Date Received: 05/14/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	344			P
7440-36-0	Antimony	2.3	U		P
7440-38-2	Arsenic	3.6	U		P
7440-39-3	Barium	191	B		P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	124000			P
7440-47-3	Chromium	5.2	B		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	6.4	B		P
7439-89-6	Iron	1550			P
7439-92-1	Lead	1.9	B		P
7439-95-4	Magnesium	36300			P
7439-96-5	Manganese	22.4			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.8	B		P
7440-09-7	Potassium	3670	B		P
7782-49-2	Selenium	3.5	U		P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	144000			P
7440-28-0	Thallium	0.60	U	W	F
7440-62-2	Vanadium	1.6	B		P
7440-66-6	Zinc	12.6	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW-1ANB

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58427_

Matrix (soil/water): WATER Lab Sample ID: 300743

Level (low/med): LOW__ Date Received: 05/14/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	317			P_
7440-36-0	Antimony_	2.3	U		P_
7440-38-2	Arsenic__	3.6	U		P_
7440-39-3	Barium___	183	B		P_
7440-41-7	Beryllium	0.35	B		P_
7440-43-9	Cadmium__	0.40	U		P_
7440-70-2	Calcium__	119000			P_
7440-47-3	Chromium_	5.4	B		P_
7440-48-4	Cobalt___	1.1	U		P_
7440-50-8	Copper___	1.0	U		P_
7439-89-6	Iron_____	939			P_
7439-92-1	Lead_____	1.1	U		P_
7439-95-4	Magnesium	34800			P_
7439-96-5	Manganese	13.3	B		P_
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	3.5	B		P_
7440-09-7	Potassium	3560	B		P_
7782-49-2	Selenium_	3.5	U		P_
7440-22-4	Silver___	1.2	U		P_
7440-23-5	Sodium___	141000			P_
7440-28-0	Thallium_	0.60	U	W	F_
7440-62-2	Vanadium_	1.3	U		P_
7440-66-6	Zinc_____	5.8	B		P_
	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW2DAN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58394_

Matrix (soil/water): WATER Lab Sample ID: 300589

Level (low/med): LOW__ Date Received: 05/09/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	19.5	U		P_
7440-36-0	Antimony_	2.3	U		P_
7440-38-2	Arsenic__	3.6	U		P_
7440-39-3	Barium___	143	B		P_
7440-41-7	Beryllium	0.20	U		P_
7440-43-9	Cadmium__	0.40	U		P_
7440-70-2	Calcium__	115000			P_
7440-47-3	Chromium_	1.4	U		P_
7440-48-4	Cobalt___	1.1	U		P_
7440-50-8	Copper___	2.1	B		P_
7439-89-6	Iron_____	102			P_
7439-92-1	Lead_____	1.1	U		P_
7439-95-4	Magnesium	37000			P_
7439-96-5	Manganese	3.1	B		P_
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	1.7	U		P_
7440-09-7	Potassium	2280	B		P_
7782-49-2	Selenium_	3.5	U		P_
7440-22-4	Silver___	1.2	U		P_
7440-23-5	Sodium___	54300			P_
7440-28-0	Thallium_	0.60	U	W	F_
7440-62-2	Vanadium_	1.3	U		P_
7440-66-6	Zinc_____	6.4	B		P_
	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW2DANB

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58394_

Matrix (soil/water): WATER Lab Sample ID: 300590

Level (low/med): LOW__ Date Received: 05/09/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	29.5	B		P_
7440-36-0	Antimony_	2.3	U		P_
7440-38-2	Arsenic__	3.6	U		P_
7440-39-3	Barium___	143	B		P_
7440-41-7	Beryllium	0.20	U		P_
7440-43-9	Cadmium__	0.40	U		P_
7440-‾0-2	Calcium__	117000			P_
7440-47-3	Chromium_	1.4	U		P_
7440-48-4	Cobalt___	1.1	U		P_
7440-50-8	Copper___	2.2	B		P_
7439-89-6	Iron_____	126			P_
7439-92-1	Lead_____	1.1	U		P_
7439-95-4	Magnesium	37200			P_
7439-96-5	Manganese	3.6	B		P_
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	1.7	U		P_
7440-09-7	Potassium	2300	B		P_
7782-49-2	Selenium_	3.5	U		P_
7440-22-4	Silver___	1.2	U		P_
7440-23-5	Sodium___	55000			P_
7440-28-0	Thallium_	0.60	U	W	F_
7440-62-2	Vanadium_	1.3	U		P_
7440-66-6	Zinc_____	2.7	B		P_
	Cyanide__		_		NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW4DAN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58394_

Matrix (soil/water): WATER Lab Sample ID: 300584

Level (low/med): LOW__ Date Received: 05/09/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	42.1	B		P_
7440-36-0	Antimony_	2.3	U		P_
7440-38-2	Arsenic__	3.6	U		P_
7440-39-3	Barium___	150	B		P_
7440-41-7	Beryllium	0.20	U		P_
7440-43-9	Cadmium__	0.40	U		P_
7440-70-2	Calcium__	128000			P_
7440-47-3	Chromium_	1.4	U		P_
7440-48-4	Cobalt___	1.1	U		P_
7440-50-8	Copper___	3.1	B		P_
7439-89-6	Iron_____	109			P_
7439-92-1	Lead_____	1.1	U		P_
7439-95-4	Magnesium	39800			P_
7439-96-5	Manganese	5.2	B		P_
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	2.0	B		P_
7440-09-7	Potassium	2670	B		P_
7782-49-2	Selenium_	3.5	U		P_
7440-22-4	Silver___	1.2	U		P_
7440-23-5	Sodium___	36400			P_
7440-28-0	Thallium_	0.60	U	W	F_
7440-62-2	Vanadium_	1.3	U		P_
7440-66-6	Zinc_____	12.8	B		P_
	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW4D2AN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58394_

Matrix (soil/water): WATER Lab Sample ID: 300586

Level (low/med): LOW__ Date Received: 05/09/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19.5	U		P
7440-36-0	Antimony	2.3	U		P
7440-38-2	Arsenic	3.6	U		P
7440-39-3	Barium	114	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	135000			P
7440-47-3	Chromium	1.4	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	2.3	B		P
7439-89-6	Iron	125			P
7439-92-1	Lead	1.1	U		P
7439-95-4	Magnesium	41700			P
7439-96-5	Manganese	64.0			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	1.7	U		P
7440-09-7	Potassium	3990	B		P
7782-49-2	Selenium	3.5	U		P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	34000			P
7440-28-0	Thallium	0.60	U		F
7440-62-2	Vanadium	1.3	U		P
7440-66-6	Zinc	7.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW-5AN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58427_

Matrix (soil/water): WATER Lab Sample ID: 300740

Level (low/med): LOW__ Date Received: 05/14/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	73.4	B		P_
7440-36-0	Antimony_	2.3	U		P_
7440-38-2	Arsenic__	3.6	U		P_
7440-39-3	Barium___	185	B		P_
7440-41-7	Beryllium	0.48	B		P_
7440-43-9	Cadmium__	0.40	U		P_
7440-70-2	Calcium__	124000			P_
7440-47-3	Chromium_	2.7	B		P_
7440-48-4	Cobalt___	1.1	U		P_
7440-50-8	Copper___	1.0	U		P_
7439-89-6	Iron_____	324			P_
7439-92-1	Lead_____	1.8	B		P_
7439-95-4	Magnesium	39800			P_
7439-96-5	Manganese	6.6	B		P_
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	1.7	U		P_
7440-09-7	Potassium	3340	B		P_
7782-49-2	Selenium_	3.5	U		P_
7440-22-4	Silver___	1.2	U		P_
7440-23-5	Sodium___	40700			P_
7440-28-0	Thallium_	0.60	U		F_
7440-62-2	Vanadium_	1.3	U		P_
7440-66-6	Zinc_____	9.5	B		P_
	Cyanide__		_		NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW6AN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58394_

Matrix (soil/water): WATER Lab Sample ID: 300591

Level (low/med): LOW__ Date Received: 05/09/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	19.5	U		P_
7440-36-0	Antimony_	2.3	U		P_
7440-38-2	Arsenic__	3.6	U		P_
7440-39-3	Barium___	194	B		P_
7440-41-7	Beryllium	0.20	U		P_
7440-43-9	Cadmium__	0.40	U		P_
7440-70-2	Calcium__	132000			P_
7440-47-3	Chromium_	1.8	B		P_
7440-48-4	Cobalt___	1.1	U		P_
7440-50-8	Copper___	2.7	B		P_
7439-89-6	Iron_____	91.3	B		P_
7439-92-1	Lead_____	1.1	U		P_
7439-95-4	Magnesium	42400			P_
7439-96-5	Manganese	1.2	B		P_
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	2.1	B		P_
7440-09-7	Potassium	3460	B		P_
7782-49-2	Selenium_	3.5	U		P_
7440-22-4	Silver___	1.2	U		P_
7440-23-5	Sodium___	43200			P_
7440-28-0	Thallium_	0.60	U	W	F_
7440-62-2	Vanadium_	1.3	U		P_
7440-66-6	Zinc_____	2.5	B		P_
	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW-6DAN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58427_

Matrix (soil/water): WATER Lab Sample ID: 300865

Level (low/med): LOW__ Date Received: 05/15/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5710			P
7440-36-0	Antimony	2.3	U		P
7440-38-2	Arsenic	10.8			P
7440-39-3	Barium	159	B		P
7440-41-7	Beryllium	0.58	B		P
7440-43-9	Cadmium	0.40	B		P
7440-70-2	Calcium	149000			P
7440-47-3	Chromium	31.8			P
7440-48-4	Cobalt	4.9	B		P
7440-50-8	Copper	26.0			P
7439-89-6	Iron	15600			P
7439-92-1	Lead	16.8			P
7439-95-4	Magnesium	47000			P
7439-96-5	Manganese	194			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	35.4	B		P
7440-09-7	Potassium	6300			P
7782-49-2	Selenium	5.6			P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	38400			P
7440-28-0	Thallium	0.60	U		F
7440-62-2	Vanadium	34.7	B		P
7440-66-6	Zinc	90.5			P
	Cyanide				NR

Color Before: BROWN____ Clarity Before: CLOUDY Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MW-8DAN

Lab Name: INCHCAPE_ENVIRONMENTAL___ Contract: 96210_____

Lab Code: INCHVT Case No.: 96210_ SAS No.: ______ SDG No.: 58427_

Matrix (soil/water): WATER Lab Sample ID: 300864

Level (low/med): LOW__ Date Received: 05/15/96

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	185	B		P_
7440-36-0	Antimony_	2.3	U		P_
7440-38-2	Arsenic__	3.6	U		P_
7440-39-3	Barium___	144	B		P_
7440-41-7	Beryllium	0.42	B		P_
7440-43-9	Cadmium__	0.40	U		P_
7440-70-2	Calcium__	118000			P_
7440-47-3	Chromium_	1.8	B		P_
7440-48-4	Cobalt___	1.1	U		P_
7440-50-8	Copper___	1.0	U		P_
7439-89-6	Iron_____	1650			P_
7439-92-1	Lead_____	1.1	B		P_
7439-95-4	Magnesium	35400			P_
7439-96-5	Manganese	85.5			P_
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	2.5	B		P_
7440-09-7	Potassium	3050	B		P_
7782-49-2	Selenium_	3.5	U		P_
7440-22-4	Silver___	1.2	U		P_
7440-23-5	Sodium___	31200			P_
7440-28-0	Thallium_	0.60	U		F_
7440-62-2	Vanadium_	1.3	U		P_
7440-66-6	Zinc_____	9.3	B		P_
	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments: